323315

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From: Drabik, Christopher (AU1633)
Sent: Thursday, December 07, 2000 4:57 PM
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Subject: ill order

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Yusibov V, et al (1999) Curr Top Microbiol Immunol 240:81-94

Thanks

Chris Drabik
AU 1633

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1 NO 12/8

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FILE 'DGENE, CAPLUS, BIOSIS, MEDLINE, EMBASE, SCISEARCH' ENTERED AT 11:49:52 ON 07 DEC 2000

```
L1          258 S GEMINVIRUS OR BADNAVIRUS
L2           58 S L1 AND (TRANSGEN? OR VECTOR?)
L3         3767 S GEMINIVIRUS OR BADNAVIRUS
L4           58 S L1 AND (VECTOR? OR TRANSGEN?)
L5         1434 S L3 AND (VECTOR? OR TRANSGEN?)
L6         1027 DUP REM L5 (407 DUPLICATES REMOVED)
L7           13 S L6 AND SILENC?
L8          814 S L5 AND ED=<19980330
L9            0 S L7 AND ED=<19980330
L10         516 S L3 AND TRANSGENIC PLANT
L11         443 DUP REM L10 (73 DUPLICATES REMOVED)
L12          95 S L11 AND ED=<19980330
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=> d ibib abs l12 15-30

L12 ANSWER 15 OF 95 DGENE COPYRIGHT 2000 DERWENT INFORMATION LTD
ACCESSION NUMBER: 1997N-T88472 DNA DGENE
TITLE: Prodn. of plants resistant to pathogens, esp. viruses - using
a mutant viral movement gene, esp. a mutated plant virus BC1 gene
INVENTOR: Abouzid A; Hiebert E; Polston J E; Powell C A; Young P D
PATENT ASSIGNEE: (UYFL)UNIV FLORIDA
PATENT INFO: WO 9707217 A1 19970227 37p
APPLICATION INFO: WO 1996-US13097 19960812

PRIORITY INFO: US 1996-2158 19960809
US 1995-2158 19950811
US 1996-15051 19960409
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 1997-165301 [15]
AB T88472 is the result of subcloning of the tomato mottle **geminivirus** (ToMoV) BC1 gene, found between nucleotides 1278 and 2311 of the B component of ToMoV. The sequence is truncated between nucleotides 1742 and 1766 of the B component. The mutated virus gene is used to confer resistance in plants against plant viral infection by tobacco mosaic tobamovirus, tomato mottle **geminivirus** and other related gemini- and tobamoviruses. The mutant BC1 gene does not induce pathogenic symptoms in transformed plants. Spontaneous mutations/modifications occur during Agrobacterium-mediated transformation. N.B. The sequence is described in the specification as encoding the protein W25167, this appears to be an error

L12 ANSWER 16 OF 95 DGENE COPYRIGHT 2000 DERWENT INFORMATION LTD
ACCESSION NUMBER: 1997N-T88471 DNA DGENE
TITLE: Prodn. of plants resistant to pathogens, esp. viruses - using a mutant viral movement gene, esp. a mutated plant virus BC1 gene
INVENTOR: Abouzid A; Hiebert E; Polston J E; Powell C A; Young P D
PATENT ASSIGNEE: (UYFL)UNIV FLORIDA
PATENT INFO: WO 9707217 A1 19970227 37p
APPLICATION INFO: WO 1996-US13097 19960812
PRIORITY INFO: US 1996-2158 19960809
US 1995-2158 19950811
US 1996-15051 19960409
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 1997-165301 [15]
AB T88471 is the result of subcloning of the tomato mottle **geminivirus** (ToMoV) BC1 gene, found between nucleotides 1278 and 2311 of the B component of ToMoV. The sequence is truncated between nucleotides 1742 and 1766 of the B component. The mutated virus gene is used to confer resistance in plants against plant viral infection by tobacco mosaic tobamovirus, tomato mottle **geminivirus** and other related gemini- and tobamoviruses. The mutant BC1 gene does not induce pathogenic symptoms in transformed plants. Spontaneous mutations and/or modifications occur during Agrobacterium-mediated transformation. N.B. The sequence is described in the specification as encoding the protein W25165, this appears to be an error

L12 ANSWER 17 OF 95 DGENE COPYRIGHT 2000 DERWENT INFORMATION LTD
ACCESSION NUMBER: 1996N-T37359 DNA DGENE
TITLE: Prodn. of virus-resistant **transgenic plants** - using mutated genomic sequence from phytopathogenic DNA virus
INVENTOR: Gronenborn B
PATENT ASSIGNEE: (CNRS)CENT NAT RECH SCI
PATENT INFO: WO 9608573 A1 19960321 93p
APPLICATION INFO: WO 1995-FR1192 19950915
PRIORITY INFO: FR 1994-11040 19940915
DOCUMENT TYPE: Patent
LANGUAGE: French
OTHER SOURCE: 1996-179947 [18]
AB Mutation of consensus amino acids in the NTP-binding site of **geminivirus** Rep protein is used to produce replication deficient

viruses. The mutated viral nucleic acid is used for producing **transgenic plants** that are resistant to, or tolerant of, the native virus. The present sequence encodes part of the wild-type NTP-binding site of the C1 protein (i.e. amino acids 221-228) from the Sardinian isolate of tomato yellow leaf curl virus (STYLCV). When the wild-type Lys227 codon was changed to an Ala codon by site-directed mutagenesis, transgenic Nicotiana benthamiana plants generated by transformation with the mutated virus were found to be resistant to STYLCV

L12 ANSWER 18 OF 95 DGENE COPYRIGHT 2000 DERWENT INFORMATION LTD
ACCESSION NUMBER: 1996N-T12906 DNA DGENE
TITLE: Prodn. of virus-resistant **transgenic plants** - using mutated genomic sequence from phytopathogenic DNA virus
INVENTOR: Gronenborn B
PATENT ASSIGNEE: (CNRS)CENT NAT RECH SCI
PATENT INFO: WO 9608573 A1 19960321 93p
APPLICATION INFO: WO 1995-FR1192 19950915
PRIORITY INFO: FR 1994-11040 19940915
DOCUMENT TYPE: Patent
LANGUAGE: French
OTHER SOURCE: 1996-179947 [18]
AB Mutation of consensus amino acids in the NTP-binding site of **geminivirus** Rep protein is used to produce replication deficient viruses. The mutated viral nucleic acid is used for producing **transgenic plants** that are resistant to, or tolerant of, the native virus. The present sequence encodes a mutant form of the Rep (or C1) protein from the Sardinian isolate of tomato yellow leaf curl virus (STYLCV) in which the wild-type Lys227 residue has been changed to an Arg residue; transgenic Nicotiana benthamiana plants generated by transformation with the mutated virus were not resistant to STYLCV. In contrast, plants transformed with a virus in which Lys227 had been replaced by Ala were found to be resistant

L12 ANSWER 19 OF 95 DGENE COPYRIGHT 2000 DERWENT INFORMATION LTD
ACCESSION NUMBER: 1996N-T12905 DNA DGENE
TITLE: Prodn. of virus-resistant **transgenic plants** - using mutated genomic sequence from phytopathogenic DNA virus
INVENTOR: Gronenborn B
PATENT ASSIGNEE: (CNRS)CENT NAT RECH SCI
PATENT INFO: WO 9608573 A1 19960321 93p
APPLICATION INFO: WO 1995-FR1192 19950915
PRIORITY INFO: FR 1994-11040 19940915
DOCUMENT TYPE: Patent
LANGUAGE: French
OTHER SOURCE: 1996-179947 [18]
AB Mutation of consensus amino acids in the NTP-binding site of **geminivirus** Rep protein is used to produce replication deficient viruses. The mutated viral nucleic acid is used for producing **transgenic plants** that are resistant to, or tolerant of, the native virus. The present sequence encodes a mutant form of the Rep (or C1) protein from the Sardinian isolate of tomato yellow leaf curl virus (STYLCV) in which the wild-type Lys227 residue has been changed to a His residue; transgenic Nicotiana benthamiana plants generated by transformation with the mutated virus were not resistant to STYLCV. In contrast, plants transformed with a virus in which Lys227 had been replaced by Ala were found to be resistant

L12 ANSWER 20 OF 95 DGENE COPYRIGHT 2000 DERWENT INFORMATION LTD
ACCESSION NUMBER: 1996N-T12904 DNA DGENE
TITLE: Prodn. of virus-resistant **transgenic plants** - using mutated genomic sequence from phytopathogenic DNA virus
INVENTOR: Gronenborn B
PATENT ASSIGNEE: (CNRS)CENT NAT RECH SCI
PATENT INFO: WO 9608573 A1 19960321 93p
APPLICATION INFO: WO 1995-FR1192 19950915
PRIORITY INFO: FR 1994-11040 19940915
DOCUMENT TYPE: Patent
LANGUAGE: French
OTHER SOURCE: 1996-179947 [18]
AB Mutation of consensus amino acids in the NTP-binding site of **geminivirus** Rep protein is used to produce replication deficient viruses. The mutated viral nucleic acid is used for producing **transgenic plants** that are resistant to, or tolerant of, the native virus. The present sequence encodes a mutant form of the Rep (or C1) protein from the Sardinian isolate of tomato yellow leaf curl virus (STYLCV) in which the wild-type Lys227 residue has been changed to an Ala residue; transgenic Nicotiana benthamiana plants generated by transformation with the mutated virus were found to be resistant to STYLCV, i.e the mutation results in a dominant negative phenotype

L12 ANSWER 21 OF 95 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1998:175391 CAPLUS
DOCUMENT NUMBER: 128:280781
TITLE: Cloning of gene of tobacco leaf curl virus from infected Eupatorium chinense simplicifolium and use
INVENTOR(S): Oonuki, Masatoshi; Hanada, Kaoru; Sakai, Junichi
PATENT ASSIGNEE(S): Norinsuisansho Kyushu Nogyo Sh, Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10070982	A2	19980317	JP 1996-230394	19960830

AB The gene of tobacco leaf curl virus (TLCV), a **geminivirus**, is isolated from the infected leaves of Eupatorium chinense simplicifolium. The genomic sequence of TLCV exhibits low similarity to that of tomato yellow leaf curl virus such as TYLCV-THI and ToLCV-A, whereas the deduced amino acid sequences of coat protein V1 and protein C1 exhibit 75% and 80% similarity, resp., to that of both viruses. The gene may be used for the diagnosis of infection by TLCV or the prepn. of TLCV-resistant **transgenic plants**.

L12 ANSWER 22 OF 95 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1998:58428 CAPLUS
DOCUMENT NUMBER: 128:151878
TITLE: Transgenic tomato plants expressing TYLCV capsid protein are resistant to the virus: the role of the nuclear localization signal (NLS) in the resistance
AUTHOR(S): Kunik, T.; Gafni, Y.; Citovsky, V.; Czosnek, H.
CORPORATE SOURCE: Department of Genetics, Agricultural Research

Organization, Bet Dagan, 50250, Israel
SOURCE: Acta Hortic. (1997), 447(Horticultural Biotechnology in Vitro Culture and Breeding), 387-391
CODEN: AHORA2; ISSN: 0567-7572
PUBLISHER: International Society for Horticultural Science
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Tomato yellow leaf curl virus (TYLCV) is a monopartite-genome **geminivirus** transmitted by whiteflies. The capsid protein of the virus is the only known protein that serves as a component of the viral coat. The gene that encodes the capsid protein driven by the cauliflower mosaic virus 35S promoter was cloned into an Agrobacterium Ti-derived plasmid. Tomato plants, sensitive to the disease, were transformed with the TYLCV capsid protein gene. The gene was transcribed in all **transgenic plants**. These transgenic F1 plants were inoculated with TYLCV using whiteflies fed on TYLCV-infected plants. The **transgenic plants'** response to inoculation was of two kinds: (1) behavior like non-transformed tomato; or (2) expression of delayed disease symptoms and recovery from the disease with increasingly more resistance upon repeated inoculation. Transformed plants that were as sensitive to inoculation as were the non-transformed plants, expressed the capsid protein gene at the RNA level only. All the transformed plants that recovered from the disease expressed the TYLCV capsid protein as detected by western blot anal. Using sequence anal. of the amino acid sequence of the capsid protein, a nuclear localization signal (NLS) was identified at the N-terminal part of this protein. The functional activity of this NLS and its importance in the resistance of the **transgenic plants** is now being studied.

L12 ANSWER 23 OF 95 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1997:783421 CAPLUS
DOCUMENT NUMBER: 128:99770
TITLE: Molecular characterization of the nonstructural protein genes of tomato mottle virus and development of **transgenic plants** resistant to the virus (**geminivirus**)
AUTHOR(S): Duan, Yong-Ping
CORPORATE SOURCE: Univ. of Florida, Gainesville, FL, USA
SOURCE: (1996) 130 pp. Avail.: UMI, Order No. DA9800092
From: Diss. Abstr. Int., B 1998, 58(7), 3398
DOCUMENT TYPE: Dissertation
LANGUAGE: English
AB Unavailable

L12 ANSWER 24 OF 95 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1997:772154 CAPLUS
DOCUMENT NUMBER: 128:72871
TITLE: Phenotypic variation in transgenic tobacco expressing mutated **geminivirus** movement/pathogenicity (BC1) proteins
AUTHOR(S): Duan, Yong-Ping; Powell, Charles A.; Purcifull, Dan E.; Broglio, Peter; Hiebert, Ernest
CORPORATE SOURCE: Plant Pathology Department, University of Florida, Gainesville, 32611, USA
SOURCE: Mol. Plant-Microbe Interact. (1997), 10(9), 1065-1074
CODEN: MPMIEL; ISSN: 0894-0282
PUBLISHER: American Phytopathological Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Tobacco plants were transformed with the movement protein (pathogenicity)

gene (BC1) from tomato mottle **geminivirus** (TMoV), using Agrobacterium-mediated transformation. Different transgenic tobacco lines that expressed high levels of the BC1 protein had phenotypes ranging from plants with severe stunting and leaf mottling (resembling **geminivirus** symptoms) to plants with no visible symptoms. The sequence data for the BC1 transgene from the **transgenic plants** with the different phenotypes indicated an assocn. of spontaneously mutated forms of the BC1 gene in the transformed tobacco with phenotype variations. One mutated transgene assocd. with an asymptomatic phenotype had a major deletion at the C terminus of 119 amino acid residues with a recombination resulting in the addn. of 26 amino acid residues of unidentified origin. This asymptomatic, mutated BC1 attenuated the phenotypic expression of the symptomatic BC1 in a tobacco line contg. both copies of the BC1 gene. Another mutated form of the BC1 gene amplified from an asymptomatic, multicopy transgenic tobacco plant did not induce symptoms when transiently expressed in tobacco via a virus vector. The symptom attenuation in the transgenic tobacco by the asymptomatic BC1 may involve trans-dominant neg. interference.

L12 ANSWER 25 OF 95 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1997:769835 CAPLUS
DOCUMENT NUMBER: 128:84763
TITLE: The use of **geminiviruses** in biotechnology and plant molecular biology, with particular focus on Mastreviruses
AUTHOR(S): Palmer, Kenneth E.; Rybicki, Edward P.
CORPORATE SOURCE: Dep. of Microbiology, University of Cape Town, Western Cape, 7701, S. Afr.
SOURCE: Plant Sci. (Shannon, Irel.) (1997), 129(2), 115-130
CODEN: PLSCE4; ISSN: 0168-9452
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
AB A review with 79 refs. The Geminiviridae are a large family of plant viruses which have small single stranded circular DNA genomes. The minichromosome-like double stranded replicative form of the viral genome exists at very high copy no. in the nuclei of infected cells. This feature of **geminiviruses** has attracted particular interest from mol. biologists, because of the potential for their use as plasmid-like extrachromosomal replicons in plant cells. Most research on applications of **geminiviruses** in applied plant biol. has focused on the mainly bipartite, whitefly-transmitted Begomoviruses, all of which infect dicotyledonous plants. In this article, we critically review the applications of the monopartite, mainly cereal-infecting Mastreviruses for solving problems in plant biotechnol. and mol. biol. We discuss the use of Mastreviruses as markers and vectors for gene transfer, as transient or infectious gene vectors, and as episomal gene amplification systems for enhancing gene expression in **transgenic plants**. We also examine the potential for use of geminiviral genetic elements such as promoters and transcription factors for manipulating gene expression in **transgenic plants**.

L12 ANSWER 26 OF 95 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1997:746151 CAPLUS

DOCUMENT NUMBER: 128:19377
TITLE: **Transgenic plants** resistant to **geminivirus** infection
INVENTOR(S): Braun, Carl Joseph, III
PATENT ASSIGNEE(S): Seminis Vegetable Seeds, Inc., USA
SOURCE: PCT Int. Appl., 44 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9742316	A1	19971113	WO 1997-US7817	19970506
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
US 6087162	A	20000711	US 1996-643779	19960506
AU 9728323	A1	19971126	AU 1997-28323	19970506
EP 922096	A1	19990616	EP 1997-922727	19970506
R: ES, GR, IT, NL, SE, PT				
PRIORITY APPLN. INFO.:			US 1996-643779	19960506
			WO 1997-US7817	19970506

AB A method for producing **transgenic plants** exhibiting resistance to a **geminivirus**, such as tomato yellow leaf curl virus by introduction of viral genes into the plant is described. At least one **geminivirus** gene under control of a promoter that functions in plant cells is used but expression cassettes for more than one gene may be used. Preferably, the constructs uses the C1 and C4 open reading frames of tomato yellow leaf curl virus or their equiv. The prepn. of T1 lines of tomato carrying the C1 and C4 genes and showing up to 60% resistant to **geminivirus** inoculation is reported.

L12 ANSWER 27 OF 95 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1997:746150 CAPLUS
DOCUMENT NUMBER: 128:20666
TITLE: **Transgenic plants** carrying expression cassettes for **geminivirus** genes and resistant to **geminivirus** infection
INVENTOR(S): Braun, Carl Joseph, III
PATENT ASSIGNEE(S): Seminis Vegetable Seeds, Inc., USA
SOURCE: PCT Int. Appl., 44 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9742315	A1	19971113	WO 1997-US7563	19970505
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, AM,				

AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG

US 6087162	A	20000711	US 1996-643779	19960506
AU 9728275	A1	19971126	AU 1997-28275	19970505
PRIORITY APPLN. INFO.:			US 1996-643779	19960506
			WO 1997-US7563	19970505

AB A method for producing **transgenic plants** exhibiting resistance to a **geminivirus**, such as tomato yellow leaf curl virus by introduction of viral genes into the plant is described. At least one **geminivirus** gene under control of a promoter that functions in plant cells is used but expression cassettes for more than one gene may be used. Preferably, the constructs uses the C1 and C4 open reading frames of tomato yellow leaf curl virus or their equiv. The prepn. of T1 lines of tomato carrying the C1 and C4 genes and showing up to 60% resistant to **geminivirus** inoculation is reported.

L12 ANSWER 28 OF 95 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1997:696853 CAPLUS
DOCUMENT NUMBER: 127:357099
TITLE: **Transgenic plants** expressing **geminivirus** genes with increased resistance to infection
INVENTOR(S): Stout, John T.; Luu, Hang T.; Hanson, Steven F.; Maxwell, Douglas P.; Ahlquist, Paul G.
PATENT ASSIGNEE(S): Seminis Vegetable Seeds, Inc., USA; Wisconsin Alumni Research Foundation
SOURCE: PCT Int. Appl., 131 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9739110	A1	19971023	WO 1997-US6300	19970415
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9724612	A1	19971107	AU 1997-24612	19970415
BR 9710657	A	19990817	BR 1997-10657	19970415
EP 963433	A1	19991215	EP 1997-920409	19970415
R: ES, FR, GR, IT, NL, PT				
JP 2000508540	T2	20000711	JP 1997-537330	19970415
PRIORITY APPLN. INFO.:			US 1996-15517	19960416
			WO 1997-US6300	19970415

AB Expression of wild-type or mutant AC1 or C1 genes of **geminiviruses** in **transgenic plants** is used to neg. interfere in trans with geminiviral replication during infection. Such **transgenic plants** are resistant to infection by **geminivirus**. Mutation in these genes is localized to highly conserved regions encoding essential functions of the gene product such as the DNA nicking domain of the AC1 gene product. The use of the method to

generate **geminivirus**-resistant tomato is demonstrated.

L12 ANSWER 29 OF 95 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1997:397802 CAPLUS
DOCUMENT NUMBER: 127:145721
TITLE: **Geminivirus** resistance in transgenic tobacco expressing mutated BC1 protein
AUTHOR(S): Duan, Y.-P.; Powell, C. A.; Webb, S. E.; Purcifull, D.
E.; Hiebert, E.
CORPORATE SOURCE: Department Plant Pathology, University Florida, Gainesville, FL, 32611-0680, USA
SOURCE: Mol. Plant-Microbe Interact. (1997), 10(5), 617-623
CODEN: MPMIEL; ISSN: 0894-0282
PUBLISHER: American Phytopathological Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Tobacco explants were transformed by Agrobacterium-mediated transformation
with sense and antisense constructs of the movement protein genes (BC1 and
BV1) of tomato mottle **geminivirus** (TMoV). **Transgenic plants** were tested for virus resistance either by exposure to viruliferous whiteflies carrying TMoV or cabbage leaf curl **geminivirus** (CabLCV) for a 72-h inoculation period or by continuous exposure to TMoV during the life of the plants. The transgenic
lines were scored for disease symptoms, and virus replication and distribution were detd. by ELISA and dot blot hybridizations. **Transgenic plants** which expressed a mutated form (identified in a previous study) of the BC1 gene showed TMoV and CabLCV resistance. Three resistant phenotypes were obsd.: a delay in symptom development, a recovery from early symptoms, and an absence of virus symptoms at all stages. **Geminivirus** was detected in inoculated leaves but was not readily detected in leaves beyond the inoculation sites
in the highly resistant plants. The **geminivirus** resistance conferred by expression of the spontaneously mutated BC1 gene (detected after transformation) in transgenic tobacco may involve transdominant neg.
interference.

L12 ANSWER 30 OF 95 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1997:251122 CAPLUS
DOCUMENT NUMBER: 126:234420
TITLE: Preparation of pathogen-resistant **transgenic plants** harboring plant virus BC1 gene mutant
INVENTOR(S): Hiebert, Ernest; Abouzid, Ahmed; Young, Ping Duan; Powell, Charles A.; Polston, Jane E.
PATENT ASSIGNEE(S): University of Florida, USA
SOURCE: PCT Int. Appl., 37 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9707217	A1	19970227	WO 1996-US13097	19960812

W: AL, AU, BB, BG, BR, CA, CN, CZ, EE, GE, HU, IL, IS, JP, KP, KR,

LK, LR, LT, LV, MG, MK, MN, MX, NO, NZ, PL, RO, SG, SI, SK, TR,
TT, UA, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR,
IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML,
MR, NE, SN, TD, TG

CA 2229168	AA	19970227	CA 1996-2229168 19960812
AU 9667233	A1	19970312	AU 1996-67233 19960812
PRIORITY APPLN. INFO.:			US 1995-2158 19950811
			US 1996-15051 19960409
			US 1996-689544 19960809
			WO 1996-US13097 19960812

AB Disclosed is a mutant plant virus gene B1 which confers resistance on tobacco and tomato plants against tobacco mosaic tobamovirus and tomato mottle **geminivirus** infections and infection by other related **geminiviruses**. A gene was initially isolated from the known BC1 gene, between nucleotides 1278 and 2311 of the B component of tomato mottle **geminivirus**. Upon subcloning of this DNA fragment into an appropriate expression vector and transformation of the gene into tobacco plants, a truncated gene product was produced which confers resistance against viral infection to the recombinant plant in which it is expressed.

=> d ibib abs l12 30-95

L12 ANSWER 30 OF 95 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1997:251122 CAPLUS
DOCUMENT NUMBER: 126:234420
TITLE: Preparation of pathogen-resistant **transgenic plants** harboring plant virus BC1 gene mutant
INVENTOR(S): Hiebert, Ernest; Abouzid, Ahmed; Young, Ping Duan; Powell, Charles A.; Polston, Jane E.
PATENT ASSIGNEE(S): University of Florida, USA
SOURCE: PCT Int. Appl., 37 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9707217	A1	19970227	WO 1996-US13097	19960812
W: AL, AU, BB, BG, BR, CA, CN, CZ, EE, GE, HU, IL, IS, JP, KP, KR, LK, LR, LT, LV, MG, MK, MN, MX, NO, NZ, PL, RO, SG, SI, SK, TR, TT, UA, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
CA 2229168	AA	19970227	CA 1996-2229168	19960812
AU 9667233	A1	19970312	AU 1996-67233	19960812
PRIORITY APPLN. INFO.:			US 1995-2158	19950811
			US 1996-15051	19960409
			US 1996-689544	19960809
			WO 1996-US13097	19960812

AB Disclosed is a mutant plant virus gene B1 which confers resistance on tobacco and tomato plants against tobacco mosaic tobamovirus and tomato mottle **geminivirus** infections and infection by other related **geminiviruses**. A gene was initially isolated from the known BC1

gene, between nucleotides 1278 and 2311 of the B component of tomato mottle **geminivirus**. Upon subcloning of this DNA fragment into an appropriate expression vector and transformation of the gene into tobacco plants, a truncated gene product was produced which confers resistance against viral infection to the recombinant plant in which it is expressed.

L12 ANSWER 31 OF 95 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1996:640781 CAPLUS
DOCUMENT NUMBER: 125:294245
TITLE: Resistance to tomato yellow leaf curl **geminivirus** in Nicotiana benthamiana plants transformed with a truncated viral C1 gene
AUTHOR(S): Noris, E.; Accotto, G. P.; Tavazza, R.; Brunetti, A.; Crespi, S.; Tavazza, M.
CORPORATE SOURCE: Istituto di Fitovirologia Applicata, National Res. Council, Turin, 10135, Italy
SOURCE: Virology (1996), 224(1), 130-138
CODEN: VIRLAX; ISSN: 0042-6822
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The C1 gene of tomato yellow leaf curl **geminivirus** (TYLCV) encodes a multifunctional protein (Rep) involved in replication. A truncated form of this gene, capable of expressing the N-terminal 210 amino acids (aa) of the Rep protein, was cloned under the control of the CaMV 35S promoter and introduced into Nicotiana benthamiana using Agrobacterium tumefaciens. The same sequence was also cloned in antisense orientation. When self-pollinated progeny of 19 primary transformants were tested for resistance to TYLCV by agroinoculation, some plants proved to be resistant,particularly in the sense lines. Two such lines were further studied. The presence of the transgene was verified and its expression was followed at intervals. All plants that were resistant to TYLCV at 4 wk postinoculation (wpi) contained detectable amts. of transgenic mRNA and protein at the time of infection. Resistance was overcome in a few plants at 9 wpi, and in most at 15 wpi. Infection of leaf disks derived from **transgenic plants** showed that expression of the transgene correlated with a substantial redn. of viral DNA replication. Cotransfections of tobacco protoplasts demonstrated that inhibition of viral DNA replication requires expression of the truncated Rep protein and suggest that the small ORF C4, was also present in our construct, plays no role in the resistance obsd. The results obtained using both transient and stable gene expression systems show that the expression of the N-terminal 210 aa of the TYLCV Rep protein efficiently interferes with virus infection.

L12 ANSWER 32 OF 95 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1996:363512 CAPLUS
DOCUMENT NUMBER: 125:27658
TITLE: Phytopathogenic DNA virus-resistant **transgenic plants** and seeds and methods for obtaining same
INVENTOR(S): Gronenborn, Bruno
PATENT ASSIGNEE(S): Centre National De La Recherche Scientifique, Fr.
SOURCE: PCT Int. Appl., 92 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: French

FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9608573	A1	19960321	WO 1995-FR1192	19950915
W: AU, US				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
FR 2724536	A1	19960322	FR 1994-11040	19940915
FR 2724536	B1	19961227		
AU 9534760	A1	19960329	AU 1995-34760	19950915
EP 781342	A1	19970702	EP 1995-931256	19950915
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE				
US 6133505	A	20001017	US 1997-809103	19970317
PRIORITY APPLN. INFO.:			FR 1994-11040	19940915
			WO 1995-FR1192	19950915

AB Use of nucleotide sequences produced by mutation of sequences present in a phytopathogenic DNA virus to produce virus-resistant **transgenic plants** is claimed. The mutant nucleotide sequences comprise one or more mutations capable of producing a dominant neg. phenotype for the replication of the pathogenic virus, and/or its diffusion in a plant, and/or its spread from one plant to another. Transgenic tobacco expressing a gene for [Ala-227]-protein C1 of tomato yellow leaf curl virus (TYLCV) exhibited TYLCV resistance. This mutation destroyed the ATPase activity of C1, an activity necessary for its role in TYLCV replication.

L12 ANSWER 33 OF 95 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1996:339441 CAPLUS
DOCUMENT NUMBER: 125:27169
TITLE: Resistance to **geminivirus** infection by virus-induced expression of dianthin in **transgenic plants**
AUTHOR(S): Hong, Yiguo; Saunders, Keith; Hartley, Martin R.; Stanley, John
CORPORATE SOURCE: Department Virus Research, John Innes Centre, Norwich, NR4 7UH, UK
SOURCE: Virology (1996), 220(1), 119-127
CODEN: VIRLAX; ISSN: 0042-6822
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The action of dianthin, a potent ribosome-inactivating protein isolated from Dianthus caryophyllus, has been exploited to engineer resistance to a plant DNA virus, African cassava mosaic virus (ACMV), in transgenic Nicotiana benthamiana. To achieve this, dianthin has been expressed from the ACMV virion-sense promoter that is trans-activated by the product of viral gene AC2. This avoids the need for constitutive expression of the RIP, facilitating the regeneration of phenotypically normal plants, and ensures transgene expression is localized to virus-infected cells. When challenged with ACMV, **transgenic plants** produce atypical necrotic lesions on inoculated leaves, indicative of dianthin expression, viral DNA accumulation is significantly reduced in these tissues, and plants exhibit attenuated systemic symptoms from which they recover. This phenotype holds for isolates of ACMV but not for other **geminiviruses**, suggesting that AC2 homologs from the latter are unable to efficiently trans-activate the ACMV promoter.

L12 ANSWER 34 OF 95 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1995:664228 CAPLUS
DOCUMENT NUMBER: 123:79777
TITLE: A **geminivirus** induces expression of a host DNA synthesis protein in terminally differentiated plant cells
AUTHOR(S): Nagar, Steven; Pedersen, Thomas J.; Carrick, Kevin M.; Hanley-Bowdoin, Linda; Robertson, Dominique
CORPORATE SOURCE: Dep. Botany, North Carolina State Univ., Raleigh, NC, 27695-7612, USA
SOURCE: Plant Cell (1995), 7(6), 705-19
CODEN: PLCEEW; ISSN: 1040-4651
DOCUMENT TYPE: Journal
LANGUAGE: English
AB **Geminiviruses** are plant DNA viruses that replicate through DNA intermediates in plant nuclei. The viral components required for replication are known, but no host factors have yet been identified. Immunolocalization was used to show that the replication proteins of the **geminivirus** tomato golden mosaic virus (TGMV) are located in nuclei of terminally differentiated cells that have left the cell cycle. In addn., TGMV infection resulted in a significant accumulation of the host DNA synthesis protein proliferating cell nuclear antigen (PCNA). PCNA, an accessory factor for DNA polymerase .delta., was not present at detectable levels in healthy differentiated cells. The TGMV replication protein AL1 was sufficient to induce accumulation of PCNA in terminally differentiated cells of **transgenic plants**. Anal. of the mechanisms(s) whereby AL1 induces the accumulation of host replication machinery in quiescent plant cells will provide a unique opportunity to study plant DNA synthesis.

L12 ANSWER 35 OF 95 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1995:561383 CAPLUS
DOCUMENT NUMBER: 123:4601
TITLE: Plant DNA virus ribozymes and their use in preparing virus-resistant **transgenic plants**
INVENTOR(S): Lenee, Philippe; Gruber, Veronique; Baudino, Sylvie; Mason, John; Comeau, David; Rezaian, Mohamad Ali; Dry, Ian Barry; Rigden, Justin Ellis
PATENT ASSIGNEE(S): Biocem, Fr.; Commonwealth Scientific and Industrial Research Organization
SOURCE: PCT Int. Appl., 89 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9503404	A1	19950202	WO 1993-EP1946	19930722
W: AU, CA, JP, US				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
CA 2167701	AA	19950202	CA 1993-2167701	19930722
AU 9347014	A1	19950220	AU 1993-47014	19930722
EP 728199	A1	19960828	EP 1993-917617	19930722
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE				
JP 09505461	T2	19970603	JP 1993-504865	19930722

ZA 9405414 A 19950301 ZA 1994-5414 19940722
PRIORITY APPLN. INFO.: WO 1993-EP1946 19930722
OTHER SOURCE(S): MARPAT 123:4601
AB A ribozyme comprising a hybridizing region and catalytic region is provided. The hybridizing region is capable of hybridizing to at least part of the target mRNA sequence transcribed from a DNA virus capable of infecting plant cells. The catalytic region is capable of cleaving the mRNA sequence thereby reducing replication, infection and/or assembly of the DNA virus. Prepn. of expression plasmids for ribozymes targeting the conserved regions of C1 gene between tomato leaf curl virus isolates and expression of the ribozymes in transgenic tobacco cell lines are also shown. Prepn. of expression plasmids for polyribozymes was also demonstrated.

L12 ANSWER 36 OF 95 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1994:623670 CAPLUS
DOCUMENT NUMBER: 121:223670
TITLE: **Geminivirus**-based gene expression system for plant
INVENTOR(S): Kridl, Jean C.; Knauf, Vic C.; Bruening, George
PATENT ASSIGNEE(S): Calgene Inc., USA; University of California
SOURCE: PCT Int. Appl., 30 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9419477	A1	19940901	WO 1994-US2255	19940223
W: CA, JP				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
US 5650303	A	19970722	US 1993-24164	19930226
CA 2156720	AA	19940901	CA 1994-2156720	19940223
EP 686197	A1	19951213	EP 1994-910807	19940223
EP 686197	B1	20000607		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE				
JP 08509860	T2	19961022	JP 1994-519347	19940223
AT 193729	E	20000615	AT 1994-910807	19940223
ES 2148323	T3	20001016	ES 1994-910807	19940223
US 5589379	A	19961231	US 1994-248859	19940523

PRIORITY APPLN. INFO.: US 1993-24164 19930226
US 1993-42103 19930402
WO 1994-US2255 19940223

AB A **geminivirus**-based vector system for controlled expression of a gene in **transgenic plant** cells is disclosed. A binary expression vector based on African cassava mosaic virus (ACMV) was constructed; which vector contains the viral transactivating factor AC2 under the control of the ACP regulatory element, a C12-specific thioesterase from bay laurel under the control of the viral coat protein regulatory elements, and a kanamycin resistance gene under the control of the CaMV 35s promoter. The binary vector can be transformed into Agrobacterium tumefaciens and used to produce transgenic Brassica plants.

L12 ANSWER 37 OF 95 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1994:572066 CAPLUS
DOCUMENT NUMBER: 121:172066
TITLE: Strain-specific mobilization and amplification of a transgenic defective-interfering DNA of the

geminivirus beet curly top virus
AUTHOR(S): Stenger, Drake C.
CORPORATE SOURCE: Department of Biological Sciences, Northern Illinois University, DeKalb, IL, 60115, USA
SOURCE: Virology (1994), 203(2), 397-402
CODEN: VIRLAX; ISSN: 0042-6822
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Transgenic Nicotiana benthamiana plants have been constructed which bear integrated, tandemly repeated copies of a beet curly top virus (BCTV) defective-interfering (DI) DNA derived from the Logan strain. Transgenic DI-DNA plant lines challenge-inoculated with BCTV-Logan exhibited delayed and attenuated symptoms compared to nontransgenic plants. Infection of **transgenic plants** with the Logan strain resulted in the mobilization of the integrated DI-DNA sequence, which was subsequently amplified as an episome. The accumulation of Logan helper virus DNA forms was reduced in **transgenic plants**, relative to nontransgenic plants. In contrast, no delay or attenuation of symptoms was obsd. for **transgenic plants** challenge-inoculated with the BCTV strains CFH and Worland. Infection by the CFH and Worland strains did not result in mobilization or amplification of the integrated Logan DI-DNA sequence, and no consistent differences in the accumulation of CFH or Worland genomic viral DNA forms were obsd. among transgenic and nontransgenic plants. These results, and a comparison of putative DNA replication origin sequences, suggest that BCTV strains display specificity with respect to recognition of heterologous DNA replication origin cis-elements.

L12 ANSWER 38 OF 95 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1994:102312 CAPLUS
DOCUMENT NUMBER: 120:102312
TITLE: Transgenic tobacco plants expressing the **geminivirus** BL1 protein exhibit symptoms of viral disease
AUTHOR(S): Pascal, Erica; Goodlove, Paige E.; Wu, Leeju C.; Lazarowitz, Sondra G.
CORPORATE SOURCE: Dep. Microbiol., Univ. Illinois, Urbana, IL, 61801, USA
SOURCE: Plant Cell (1993), 5(7), 795-807
CODEN: PLCEEW; ISSN: 1040-4651
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Bipartite **geminiviruses**, such as squash leaf curl virus (SqLCV), encode two movement proteins (MPs), BR1 and BL1, that are essential for viral movement in and subsequent infection of the host plant. To elucidate the biochem. functions of these MPs and define their resp. contributions to viral infection, the authors have generated transgenic Nicotiana benthamiana plants expressing SqLCV BR1 and BL1. **Transgenic plants** expressing BR1 or a truncated BL1 were phenotypically indistinguishable from wild-type N. benthamiana. In contrast, **transgenic plants** expressing full-length BL1, alone or in combination with BR1, were strikingly abnormal both in their growth properties and phenotypic appearance, with leaves that were mosaic and curled under, thus mimicking typical SqLCV disease symptoms in this host. BL1 was localized to the cell wall and plasma membrane fractions, whereas BR1 was predominantly in the microsomal membrane fraction. These findings demonstrate that expression of BL1 in **transgenic plants** is sufficient to produce viral disease symptoms, and they further suggest that BL1 and BR1 carry out distinct and

independent functions in viral movement.

L12 ANSWER 39 OF 95 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1993:509862 CAPLUS
DOCUMENT NUMBER: 119:109862
TITLE: Use of antisense RNA technology to engineer virus resistance in plants
AUTHOR(S): Bejarano, Eduardo R.; Day, Anthony G.; Lichtenstein, Conrad P.
CORPORATE SOURCE: Cent. Biotechnol., Imp. Coll. Sci. Technol. Med., London, SW7 2AZ, UK
SOURCE: Mod. Cell Biol. (1992), 11(Antisense RNA and DNA), 137-58
CODEN: MOCBDA; ISSN: 0745-3000
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
AB A review with 76 refs. on various strategies to engineer virus resistance in plants with special focus on the use of antisense RNA. The authors also review the development of plant gene transfer technol. using the "natural plant genetic engineer" soil bacterium Agrobacterium tumefaciens, as this technol. has revolutionized the methods to improve plant resistance to pathogens. Initially antisense RNA was used against plant RNA viruses, but perhaps because RNA viruses probably replicate in the cytoplasm these expts. have had limited success. The approach described here was to use A. tumefaciens-mediated gene transfer to construct transgenic tobacco plants carrying a genetic cassette including an antisense gene sequence of a virally encoded gene of the plant viral pathogen tomato golden mosaic virus (TGMV). The virus is a member of the family of single-stranded (ss) DNA viruses called **geminiviruses** that replicate in the nucleus. The gene chosen encodes a protein absolutely required for TGMV DNA replication. These genetic cassettes also contained, on the same transcription unit, a gene encoding hygromycin resistance, allowing selection for concomitant expression of the antisense gene. **Transgenic plants** were challenged by infection with TGMV; the frequency of symptom development was very significantly reduced in a no. of antisense lines and correlated broadly with the abundance of antisense RNA transcript and with a redn. in viral DNA harvested from infected leaf tissue. The expression of the antisense RNA inhibits the replication of the virus in leaves; thus the redn. in symptom development is presumably due mainly to inhibition of DNA replication.

L12 ANSWER 40 OF 95 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1992:167428 CAPLUS
DOCUMENT NUMBER: 116:167428
TITLE: The use of African cassava mosaic virus as a vector system for plants
AUTHOR(S): Meyer, Peter; Heidmann, Iris; Niedenhof, Ingrid
CORPORATE SOURCE: Max-Delbrueck-Lab., MPG, Cologne, D-5000/30, Germany
SOURCE: Gene (1992), 110(2), 213-17
CODEN: GENED6; ISSN: 0378-1119
DOCUMENT TYPE: Journal
LANGUAGE: English
AB This paper describes the development of a gene-displacement vector based on DNA1, one of two single stranded circular genomic components of a bipartite **geminivirus**, African cassava mosaci virus (ACMV). The DNA1 mols. of ACMV were cloned as dimers into a plant transformation vector and the constructs have been integrated into tobacco protoplasts by

PEG-mediated DNA transfer. In **transgenic plants** extrachromosomal copies of DNA1 monomers could be detected. Deletion of the coat protein-encoding gene in chimeric constructs resulted in free DNA1 copies of reduced size, and extrachromosomal recombinant mols. were detected after displacement of the coat-protein-encoding region by foreign DNA fragments of comparable size. Due to the absence of the second component of ACMV, DNA2, the **transgenic plants** are free from viral infection symptoms which allows the establishment of healthy transformants that carry a recombinant construct in an extrachromosomal form.

L12 ANSWER 41 OF 95 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1990:546662 CAPLUS
DOCUMENT NUMBER: 113:146662
TITLE: Defective viral DNA ameliorates symptoms of **geminivirus** infection in **transgenic plants**
AUTHOR(S): Stanley, John; Frischmuth, Thomas; Ellwood, Susan
CORPORATE SOURCE: John Innes Cent. Plant Sci. Res., John Innes Inst., Norwich, NR4 7UH, UK
SOURCE: Proc. Natl. Acad. Sci. U. S. A. (1990), 87(16), 6291-5
CODEN: PNASA6; ISSN: 0027-8424
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Nicotiana benthamiana was transformed with a single copy of a tandem repeat of subgenomic DNA B isolated from plants infected with a Kenyan isolated of the bipartite **geminivirus**, African cassava mosaic virus. Symptoms in transformed plants were less severe than in nontransformed controls when challenged with virus or cloned DNA of Kenyan or Nigerian isolates. Symptom amelioration was assocd. with the mobilization and amplification of the subgenomic DNA, producing a comparable redn. in the amt. of DNA specific to each genomic component. The disproportionate redn. in the levels of full--length components (DNA A, 20%; DNA B, 70%) indicates that the episomally replicating subgenomic DNA has been amplified at the expense of full-length DNA B to three times the level of the latter. Serial infection of transformants resulted in a further decrease in symptom severity of symptoms or levels of viral DNA when transformants and controls were challenged with the related **geminiviruses**, beet curly top virus and tomato golden mosaic virus, demonstrating the specific nature of the interaction. Anal. of infected tissue showed that tomato golden mosaic virus was unable to amplify the subgenomic DNA. However, since the prodn. of subgenomic DNA is possibly a common feature of the bipartite **geminiviruses**, this approach might contribute to the prodn. of plants showing increased tolerance to a no. of economically important viral diseases.

L12 ANSWER 42 OF 95 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1990:152985 CAPLUS
DOCUMENT NUMBER: 112:152985
TITLE: Expression of functional replication protein from tomato golden mosaic virus in transgenic tobacco plants
AUTHOR(S): Hanley-Bowdoin, Linda; Elmer, J. Scott; Rogers, Stephen G.
CORPORATE SOURCE: Corp. Res. Lab., Monsanto Co., Saint Louis, MO, 63198, USA
SOURCE: Proc. Natl. Acad. Sci. U. S. A. (1990), 87(4), 1446-50

CODEN: PNASA6; ISSN: 0027-8424
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The A component of the bipartite genome of the **geminivirus** tomato golden mosaic virus (TGMV) encodes the viral protein (AL1) that is required for viral DNA replication. Nicotiana benthamiana plants were constructed in which the Al1 open reading frame is transcribed under the control of the cauliflower mosaic virus 35S promoter. The **transgenic plants**, which were phenotypically normal, produced a single transcript from the 35A-AL1 construct and a 40-kDa protein that cross-reacted with a polyclonal antiserum raised against AL1 protein overproduced in Escherichia coli. Six of 9 transgenic lines complemented a TGMV A variant with a mutation in AL1 when coinoculated with the B component of the TGMV genome. Single- and double-stranded forms of the B component were synthesized in leaf disks from a complementing, transgenic line in the absence of TGMV A. These results establish that the **transgenic plants** express functional AL1 protein and show that this viral protein is not only required, but sufficient, for single- and double-stranded replication of TGMV DNA in the presence of host proteins. These results also show that the AL1 protein is not by itself a determinant of disease or pathogenesis.

L12 ANSWER 43 OF 95 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1990:71188 CAPLUS
DOCUMENT NUMBER: 112:71188
TITLE: Replication of tomato golden mosaic virus DNA B in **transgenic plants** expressing open reading frames (ORFs) of DNA A: requirement of ORF AL2 for production of single-stranded DNA
AUTHOR(S): Hayes, R. J.; Buck, K. W.
CORPORATE SOURCE: Dep. Biol., Imp. Coll. Sci., Technol. Med., London, SW7 2BB, UK
SOURCE: Nucleic Acids Res. (1989), 17(24), 10213-22
CODEN: NARHAD; ISSN: 0305-1048
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Tomato golden mosaic **geminivirus** has a genome of 2 single-stranded (ss) DNA components, A and B. An almost identical common region in DNA A and DNA B is thought to contain sequence elements controlling replication and transcription. Hence investigation of sequences important for DNA replication by in vitro mutagenesis is complicated by possible effects on the transcription of genes for replication proteins. To overcome this problem, **transgenic plants** expressing open reading frames (ORFs) of DNA A from an enhanced cauliflower mosaic virus 35S RNA promoter were constructed and tested for their ability to support the replication of DNA B and DNA B mutants. The results show that plants transgenic for ORF AL1 are able to support the replication of the double-stranded (ds) forms of DNA B, but that ORF AL2 is required in addn. to produce ssDNA B. ORFs AL3, BL1 or BR1 were not required for replication of ds or ssDNA B. This appears to be the first time that essential replication proteins of a **geminivirus** have been expressed constitutively from a plant genome without giving rise to replicating DNA A mols., thereby allowing DNA B to replicate alone. Such **transgenic plants** should enable not only the mutational anal. of sequence elements within the replication origin region, but also the construction of a new generation of vectors for gene amplification in plants, based on a minimal virus replicon.

L12 ANSWER 44 OF 95 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1990:31634 CAPLUS

DOCUMENT NUMBER: 112:31634
TITLE: Functional expression of the leftward open reading frames of the A component of tomato golden mosaic virus in transgenic tobacco plants
AUTHOR(S): Hanley-Bowdoin, Linda; Elmer, J. Scott; Rogers, Stephen G.
CORPORATE SOURCE: Corp. Res. Lab., Monsanto Co., St. Louis, MO, 63198, USA
SOURCE: Plant Cell (1989), 1(11), 1057-67
CODEN: PLCEEW; ISSN: 1040-4651
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The genome of the **geminivirus** tomato golden mosaic virus (TGMV) consists of two circular DNA mols. designated as components A and B. The authors constructed Nicotiana benthamiana plants that are transgenic for the three overlapping open reading frames, AL1, AL2, and AL3, from the left side of TGMV A. In the **transgenic plants**, the AL open reading frames are under the control of the cauliflower mosaic virus (CaMV) 35 S promoter. In TGMV infectivity assays, 7 of 10 transgenic lines complemented TGMV A variants with mutations in AL1, AL2, or AL3 when co-inoculated with the B component. The 35S-AL construct was transcribed as a single RNA species in the **transgenic plants**, indicating that AL1, AL2, and AL3 were expressed from a polycistronic mRNA. This differs from the complex transcription pattern in TGMV-infected plants, which contains 5 AL transcripts. There was no quant. correlation between the efficiency of complementation in the infectivity assay and the level of expression of transgenic AL RNA in the leaves of a transgenic line. One line that failed to complement defects in AL1, AL2, and AL3 in infectivity assays contained high levels of transgenic AL RNA and functional AL1 protein. These results provide evidence that chromosomal position can affect the cell- and tissue-specific transcription of the 35 S promoter in **transgenic plants**. Comparison of the complementing plants and wild-type infected plants may provide insight into the TGMV infection process and the use of the CaMV 35 S promoter for gene expression in **transgenic plants**.

L12 ANSWER 45 OF 95 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1989:207183 CAPLUS
DOCUMENT NUMBER: 110:207183
TITLE: Stability and expression of bacterial genes in replicating **geminivirus** vectors in plants
AUTHOR(S): Hayes, R. J.; Coutts, R. H. A.; Buck, K. W.
CORPORATE SOURCE: Dep. Pure Appl. Biol., Imp. Coll. Sci., Technol. Med., London, SW7 2BB, UK
SOURCE: Nucleic Acids Res. (1989), 17(7), 2391-403
CODEN: NARHAD; ISSN: 0305-1048
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Bacterial beta-glucuronidase (gus) and neomycin phosphotransferase (neo) genes were introduced into coat protein replacement vectors based on DNA A of tomato golden mosaic virus (TGMV). Recombinant gus and neo vectors up to 1.1 kbp larger than DNA A were shown to replicate stably in **transgenic plants** contg. partial dimers (master copies) of the vectors integrated into their chromosomal DNA in the absence of DNA B. Beta-glucuronidase and neomycin phosphotransferase activities in independently transformed plants were proportional to the copy no. of the

double-stranded forms of the vector. Deletion anal. has shown that an essential part of the TGMV coat protein promoter, including a TATA box, lies within 76 nt upstream of the initiation codon of the gene. An increase in expression of a neo gene was obtained by replacing this 76 nt sequence by an 800 nt sequence contg. a cauliflower mosaic virus 35S RNA promoter with no effect on the ability of the vector to replicate or on its stability in **transgenic plants**. Systemic infection of plants by agroinoculation with TGMV vectors larger than DNA A in the presence of DNA B resulted in deletions in the vector DNA in some, but not all, plants. Possible reasons for vector instability in systemically infected plants, and vector stability in **transgenic plants** contg. master copies of the vector, are discussed.

L12 ANSWER 46 OF 95 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1989:34778 CAPLUS
DOCUMENT NUMBER: 110:34778
TITLE: Transient expression of heterologous RNAs using tomato golden mosaic virus
AUTHOR(S): Hanley-Bowdoin, Linda; Elmer, J. Scott; Rogers, Stephen G.
CORPORATE SOURCE: Corp. Res. Lab., Monsanto Co., St. Louis, MO, 63198, USA
SOURCE: Nucleic Acids Res. (1988), 16(22), 10511-28
CODEN: NARHAD; ISSN: 0305-1048
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The genome of the **geminivirus** tomato golden mosaic virus (TGMV) consists of 2 circular DNA mols. designated as components A and B. The A component contains the only virally-encoded function required for autonomous replication in infected plant cells. Agroinoculation of pentunia leaf disks with the A component was used to develop a transient expression system which permits direct examn. of viral transcripts by S1 nuclease protection. The AR1 gene, which encodes the TGMV coat protein, was transcribed transiently in leaf disks after agroinoculation of TGMV A DNA. Synthesis of AR1 RNA was dependent on T-DNA transfer and TGMV DNA replication, demonstrating that is a plant transcription product. The AL open reading frames of TGMV A were also expressed transiently in leaf disks. The ratio between AR1 RNA and the major leftward RNA was const. and was used to normalize AR1 transcription for viral DNA copy no. The bacterial genes encoding chloramphenicol acetyltransferase (CAT) and beta-glucuronidase (GUS) were transiently expressed in leaf disks from the AR1 promoter in TGMV A. The levels of AR1 and GUS RNAs were similar in leaf disks after adjusting for viral DNA copy no., while CAT RNA was less abundant. The **geminivirus** transient expression system allows rapid anal. of RNAs transcribed from foreign genes and can serve as a preliminary screen in the construction of **transgenic plants**.

L12 ANSWER 47 OF 95 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1988:403651 CAPLUS
DOCUMENT NUMBER: 109:3651
TITLE: Genetic analysis of tomato golden mosaic virus: the coat protein is not required for systemic spread or symptom development
AUTHOR(S): Gardiner, William E.; Sunter, Garry; Brand, Leslie; Elmer, J. Scott; Rogers, Stephen G.; Bisaro, David M.
CORPORATE SOURCE: Ohio State Biotechnol. Cent., Ohio State Univ., Columbus, OH, 43210, USA

SOURCE: EMBO J. (1988), 7(4), 899-904
CODEN: EMJODG; ISSN: 0261-4189
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The **geminiviruses** are a unique group of higher plant viruses that are composed of twin isometric particles which contain circular, single-stranded DNA. Tomato golden mosaic virus (TGMV), a whitefly-transmitted agent, belongs to the subgroup of **geminiviruses** whose members possess a bipartite genome. The TGMV A genome component has the capacity to encode .gtoreq.4 proteins. One of these is the viral coat protein, as inferred by homol. with coat-protein genes of other **geminiviruses** and by the observation of typical geminate particles in **transgenic plants** that contain inserts of TGMV A DNA. The role of the coat protein in TGMV replication was studied. Its coding sequence may be interrupted or substantially deleted without loss of infectivity. However, certain coat-protein mutants showed reproducible delays in time of symptom appearance as well as reduced symptom development, when inoculated onto transgenic Nicotiana benthamiana plants contg. the TGMV B component. The most attenuated symptoms were seen with a mutant in which the coat-protein coding sequence was almost entirely deleted. The significance of these findings for the development of plant vectors from TGMV DNA is discussed.

L12 ANSWER 48 OF 95 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1988:183784 CAPLUS
DOCUMENT NUMBER: 108:183784
TITLE: Agrobacterium-mediated inoculation of plants with tomato golden mosaic virus DNAs
AUTHOR(S): Elmer, J. Scott; Sunter, Garry; Gardiner, William E.; Brand, Leslie; Browning, Charles K.; Bisaro, David M.; Rogers, Stephen G.
CORPORATE SOURCE: Monsanto Co., St. Louis, MO, 63198, USA
SOURCE: Plant Mol. Biol. (1988), 10(3), 225-34
CODEN: PMBIDB; ISSN: 0167-4412
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The agroinfection procedure of Grimsley and co-workers (1986-87) was adapted to develop a simple, efficient, reproducible infectivity assay for the insect-transmitted, split-genome **geminivirus**, tomato golden mosaic virus (TGMV). Agrobacterium T-DNA vectors provide efficient delivery of both components of TGMV when used in mixed inoculation of wild-type host plants. A greater increase in infection efficiency can be obtained by Agrobacterium delivery of the TGMV A component to permissive **transgenic plants**. These permissive plants contain multiple tandem copies of the B component integrated into the host genome. An inoculum contg. as few as 2000 Agrobacterium cells can produce 100% infection under these conditions. Further, there is a marked effect of the configuration of the TGMV A components within the T-DNA vector on time of symptom development. Also, **transgenic plants** carrying tandem copies of the A component do not complement the B component. Possible mechanisms to explain these results and the potential use of this system to further study the functions of the **geminivirus** components in infection are discussed.

L12 ANSWER 49 OF 95 CAPLUS COPYRIGHT 2000 ACS

ACCESSION NUMBER: 1987:434130 CAPLUS
DOCUMENT NUMBER: 107:34130
TITLE: Independent encapsidation of tomato golden mosaic virus A component DNA in **transgenic plants**
AUTHOR(S): Sunter, Garry; Gardiner, William E.; Rushing, Ann E.; Rogers, Stephen G.; Bisaro, David M.
CORPORATE SOURCE: Dep. Bot. Microbiol., Auburn Univ., Auburn, AL, 36849, USA
SOURCE: Plant Mol. Biol. (1987), 8(6), 477-84
CODEN: PMBIDB; ISSN: 0167-4412
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Tomato golden mosaic virus (TGMV), a member of the **geminivirus** group, has a genome consisting of two DNA mols. designated the A and B components. Both are required for infectivity in healthy plants, although the former has been shown to replicate independently in **transgenic plants** contg. tandem direct repeats of the A genome component. In the studies presented here, petunia plants transgenic for either both components (A .times. B hybrids) or the A component alone were examd. for the presence of virus particles and encapsidated, single stranded viral DNA. The results of DNase protection expts. and direct observation of exts. from **transgenic plants** by electron microscopy indicate that single stranded TGMV DNA is in both cases packaged into paired particles identical to those obtained from virus-infected plants. DNase-treated virions isolated from A .times. B hybrid petunia are infectious when inoculated onto healthy Nicotiana benthamiana. Likewise, virions obtained from transgenic A petunia are infectious for plants transgenic for the B component. Observations of TGMV replication in **transgenic plants** indicate that TGMV A DNA encodes all viral functions necessary for the replication and encapsidation of viral DNA. The possible role of the B component in TGMV replication is discussed.

L12 ANSWER 50 OF 95 BIOSIS COPYRIGHT 2000 BIOSIS
ACCESSION NUMBER: 1998:77690 BIOSIS
DOCUMENT NUMBER: PREV199800077690
TITLE: The TYLCV-tolerant tomato line MP-1 is characterized by superior transformation competence.
AUTHOR(S): Barg, Rivka (1); Pilowsky, Meir; Shabtai, Sara; Carmi, Nir; Szechtman, Alejandro D.; Dedicova, Beata; Salts, Yehiam
CORPORATE SOURCE: (1) Dep. Plant Genetics, Inst. Field Garden Crops, Volcani Cent., ARO, Bet Dagan 50250 Israel
SOURCE: Journal of Experimental Botany, (Nov., 1997) Vol. 48, No. 316, pp. 1919-1923.
ISSN: 0022-0957.
DOCUMENT TYPE: Article
LANGUAGE: English

AB The tomato line MP-1 excels the cultivars commonly used for transformation with regard to the speed of regeneration, percentage of transformation and frequency of phenotypically normal **transgenic plants**. These characteristics, together with its tolerance to Tomato Yellow Leaf Curl Virus, make line MP-1 very suitable for large scale generation of transgenic tomatoes.

L12 ANSWER 51 OF 95 BIOSIS COPYRIGHT 2000 BIOSIS

ACCESSION NUMBER: 1997:329723 BIOSIS
DOCUMENT NUMBER: PREV199799628926
TITLE: Lack of evidence for alteration of viruses or for assisted infection in virus infected **transgenic plants**.
AUTHOR(S): Thomas, P. E.; Hassan, S.
CORPORATE SOURCE: Vegetable and Forage Crop Production, Agric. Res. Service, U.S. Dep. Agric., 24106 N. Bunn Road, Prosser, WA 99350-9687 USA
SOURCE: Phytopathology, (1997) Vol. 87, No. 6 SUPPL., pp. S96. Meeting Info.: Annual Meeting of the American Phytopathological Society Rochester, New York, USA August 9-13, 1997
ISSN: 0031-949X.
DOCUMENT TYPE: Conference; Abstract
LANGUAGE: English

L12 ANSWER 52 OF 95 BIOSIS COPYRIGHT 2000 BIOSIS
ACCESSION NUMBER: 1997:329708 BIOSIS
DOCUMENT NUMBER: PREV199799628911
TITLE: Engineered rep gene-mediated resistance to tomato mottle **geminivirus** in tomato.
AUTHOR(S): Stout, J. T. (1); Liu, H. T. (1); Polston, J. E.; Gilbertson, R. L.; Nakhla, M. K.; Hanson, S. F.; Maxwell, D. P.
CORPORATE SOURCE: (1) Asgrow Inc., Kalamazoo, MI USA
SOURCE: Phytopathology, (1997) Vol. 87, No. 6 SUPPL., pp. S94. Meeting Info.: Annual Meeting of the American Phytopathological Society Rochester, New York, USA August 9-13, 1997
ISSN: 0031-949X.
DOCUMENT TYPE: Conference; Abstract
LANGUAGE: English

L12 ANSWER 53 OF 95 BIOSIS COPYRIGHT 2000 BIOSIS
ACCESSION NUMBER: 1997:301255 BIOSIS
DOCUMENT NUMBER: PREV199799600458
TITLE: Beet curly top virus DI DNA-mediated resistance is linked to its size.
AUTHOR(S): Frischmuth, Thomas (1); Engel, Margit; Jeske, Holger
CORPORATE SOURCE: (1) Biologisches Institut, Lehrstuhl fuer Molekularbiologie und Virologie der Pflanzen, Universitaet Stuttgart, Pfaffenwaldring 57, G-70550 Stuttgart Germany
SOURCE: Molecular Breeding, (1997) Vol. 3, No. 3, pp. 213-217.
ISSN: 1380-3743.
DOCUMENT TYPE: Article
LANGUAGE: English
AB Beet curly top virus (BCTV) infection is associated with the de novo synthesis of a heterogeneous population of subgenomic viral DNAs. Nicotiana benthamiana plants transformed with a partial repeat of one such subgenomic DNA remained susceptible to infection but produced ameliorated symptoms when agroinoculated with BCTV. Symptom amelioration is associated with the mobilization of subgenomic DNA from the integrated copy. In an attempt to improve the resistance, N. benthamiana has been transformed with a partial repeat of a much smaller subgenomic DNA. However, **transgenic plants** showed almost no resistance although subgenomic DNA was mobilised from the host genome. To further understand the molecular basis of the interference phenomenon, we compared the

ability of BCTV to replicate and accumulate in leaf discs derived from resistant and non-resistant **transgenic plants**. Both subgenomic DNAs were able to interfere with virus replication but only in case of resistant plants the DI DNA efficiently suppressed viral accumulation.

L12 ANSWER 54 OF 95 BIOSIS COPYRIGHT 2000 BIOSIS
ACCESSION NUMBER: 1997:256151 BIOSIS
DOCUMENT NUMBER: PREV199799555354
TITLE: Auxin effects on symptom development of beet curly top virus infected Arabidopsis thaliana.
AUTHOR(S): Lee, Sukchan (1); Park, Jongbum
CORPORATE SOURCE: (1) Dep. Genetic Eng., Sung Kyun Kwan Univ., Suwon 440-746 South Korea
SOURCE: Journal of Plant Biology, (1996) Vol. 39, No. 4, pp. 249-256.
DOCUMENT TYPE: Article
LANGUAGE: English
AB Beet curly top virus is the DNA virus that is providing useful for basic studies of the infection of Arabidopsis thaliana with viral host and provides a system for studying both resistance and the molecular basis of symptom development. An important aspect of symptom development observed in BCTV-infected A. thaliana (ecotype Sei-O) was the induction of cell division on phloem and surrounding cortex cells. Analysis of the expression of GUS reporter gene activity in **transgenic plants** containing constructs with promoter of the auxin-inducible saur gene showed that saur promoter activity was induced concomitantly in symptomatic tissues at the inflorescence shoot tips of the transgenic lines. The auxin sensitivity tests showed that hypersusceptible ecotype, Sei-O produced more amounts of callus than susceptible ecotype, Col-O. These studies indicated that changes in auxin concentration were involved in the induction of cell division in BCTV-infected plants and clearly demonstrated that there was a strong correlation between auxin-induced gene expression and the activation of cell division.

L12 ANSWER 55 OF 95 BIOSIS COPYRIGHT 2000 BIOSIS
ACCESSION NUMBER: 1997:163317 BIOSIS
DOCUMENT NUMBER: PREV199799462520
TITLE: Transactivation of dianthin transgene expression by African cassava mosaic virus AC2.
AUTHOR(S): Hong, Yiguo; Saunders, Keith; Stanley, John (1)
CORPORATE SOURCE: (1) Dep. Virus Res., John Innes Centre, Colney Lane, Norwich NR4 7UH UK
SOURCE: Virology, (1997) Vol. 228, No. 2, pp. 383-387. ISSN: 0042-6822.
DOCUMENT TYPE: Article
LANGUAGE: English
AB We have recently described a novel strategy for engineering resistance to African cassava mosaic virus (ACMV) in transgenic Nicotiana benthamiana plants using a virus-inducible promoter to control the expression of a plant ribosome-inactivating protein (RIP) transgene (Y. Hong et al., Virology 220, 119-127, 1996). Here, we have used a potato virus X (PVX) vector to express the ACMV transactivator protein, AC2, in planta. We confirm that amplification of RIP activity in **transgenic plants** is mediated by AC2; disruption of AC2 expression by either the introduction of an in-frame stop codon or the deletion of 5'-terminal or 3'-terminal coding sequences reduced RIP expression to the basal level associated with PVX-infected plants. AC2 expression from the PVX vector induced necrosis in nontransformed plants as well as in plants containing the RIP transgene, suggesting that the protein can functionally interact

with PVX and/or host factors. The potential of this system to provide a direct and sensitive assay to investigate AC2 function in planta is discussed.

L12 ANSWER 56 OF 95 BIOSIS COPYRIGHT 2000 BIOSIS
ACCESSION NUMBER: 1995:189567 BIOSIS
DOCUMENT NUMBER: PREV199598203867
TITLE: Characterization of the two movement proteins of squash leaf curl virus.
AUTHOR(S): Pascal, E. (1); Medville, R.; Turgeon, R.; Lazarowitz, S. G. (1)
CORPORATE SOURCE: (1) Dep. Microbiol., Univ. Ill., Urbana, IL 61801 USA
SOURCE: Journal of Cellular Biochemistry Supplement, (1995) Vol. 0,
No. 19A, pp. 147.
Meeting Info.: Keystone Symposium on Plant Cell Biology: Mechanisms, Molecular Machinery, Signals and Pathways Taos,
New Mexico, USA January 7-13, 1995
ISSN: 0733-1959.
DOCUMENT TYPE: Conference
LANGUAGE: English

L12 ANSWER 57 OF 95 BIOSIS COPYRIGHT 2000 BIOSIS
ACCESSION NUMBER: 1994:262139 BIOSIS
DOCUMENT NUMBER: PREV199497275139
TITLE: Beet curly top virus symptom amelioration in Nicotina benthamiana transformed with a naturally occurring viral subgenomic DNA.
AUTHOR(S): Frischmuth, Thomas; Stanley, John
CORPORATE SOURCE: Dep. Virus Res., John Innes Inst., John Innes Centre Plant Sci. Res., Colney Lane, Norwich NR4 7UH UK
SOURCE: Virology, (1994) Vol. 200, No. 2, pp. 826-830.
ISSN: 0042-6822.
DOCUMENT TYPE: Article
LANGUAGE: English
AB Beet curly top virus (BCTV) infection is associated with the de novo synthesis of a heterogenous population of subgenomic viral DNAs. Nicotiana benthamiana plants transformed with a partial repeat of one such subgenomic DNA remain susceptible to infection but produce ameliorated symptoms when agroinoculated with BCTV. **Transgenic plants** contained from 10 to 30% of the amount of viral DNA detected in nontransformed control plants showing severe symptoms. Symptom amelioration is associated with the mobilization of subgenomic DNA from the integrated template and its amplification to approximately one third of the total amount of viral DNA. The amplification in **transgenic plants** of a specific subgenomic DNA rather than a heterogenous population implies that mobilization from the integrated template frequently occurs during systemic infection, precluding the accumulation of other subgenomic DNA forms.

L12 ANSWER 58 OF 95 BIOSIS COPYRIGHT 2000 BIOSIS
ACCESSION NUMBER: 1994:55400 BIOSIS
DOCUMENT NUMBER: PREV199497068400
TITLE: Impact of high-yielding varieties of tobacco (Nicotiana tabacum) and changing aspects of their cultivation.
AUTHOR(S): Lakshminarayana, R.
CORPORATE SOURCE: All-India Co-ordinated Res. Project on Tabacco, Gujarat Agric. Univ., Anand 388 110 India

SOURCE: Indian Journal of Agricultural Sciences, (1993) Vol. 63, No. 11, pp. 685-693.
ISSN: 0019-5022.
DOCUMENT TYPE: Article
LANGUAGE: English
AB Rapid strides have been made in the evolution of high-yielding varieties in different tobaccos (Nicotiana spp) in India. Flue-cured virginia tobacco showed an overall improvement of 90.6% for cured leaf yield and 489.5% for bright-leaf yield during 1948-92. In bidi tobacco the yield increased by 195.6% from 1950 to 1985. Ir chewing tobacco the yield increased by 75% in Tamil Nadu (during 1948-89), 50% in Bihar (during 1958-89) and 32% in Gujarat (during 1967-85). However, average yield in a state in different tobaccos indicates that high productivity achieved on research farms did not percolate to farmers' fields. The major limiting factors in flue-cured virginia tobacco are frequent drought spells, delayed monsoon resulting in late planting, incidence of leaf-curl (Ruga tabaci Holmes) disease in Vertisols and southern Alfisols of Andhra Pradesh, non-availability of varieties resistant to root-knot nematode (Meloidogyne spp) (in northern Alfisols of Andhra Pradesh) and aphid (Myzus spp) in Alfisols of Karnataka, and the occurrence of broomrape (Orobanche cernua Leofl.). In bidi tobacco the constraints are drought stress and biotic stresses of leaf-curl and root-knot and the incidence of broomrape in Gujarat; aphid infestation and incidence of black-shank (Phytophthora parasitica var nicotianae (Breda de Haan). Tucker) as well as delayed and scanty rainfall in Karnataka. In chewing tobacco the constraints are outbreak of leaf-eating caterpillar (Spodoptera litura Fabricius), incidence of tobacco mosaic (Marmor tabaci Holmes), delayed rain leading to late planting in Tamil Nadu; incidence of viral diseases in Bihar, Toot-knot and leaf-curl diseases in Gujarat; brown-spot disease (Alternaria alternata (Fr.) Keissler) in West Bengal and lack of high-yielding varieties in Orissa. In natu tobacco the constraints are drought stress, incidence of tobacco mosaic and outbreak of leaf-eating caterpillar. In burley tobacco the constraints am the incidence of black-shank and frog-eye spot (Cercospora nicotianae Ellis & Everhart). The approaches to overcome the constraints am to breed drought-tolerant genotypes as well as to identify suitable hybrids that can maintain stable yield under adverse conditions. The resistance breeding programmes have to be pursued vigorously in view of the available donor resistant genes for disease, viz tobacco mosaic: 'Vamorr 50'; black-shank: 'Bhavya', 'Line 1071' and N. plumbaginifolia Viviani; root-knot: 'GT 5', 'Bhavya', N. amplexicaulis Burb. and N. longiflora Cav.; and for pests, viz aphid: N. gossei Domin. and leaf-eating caterpillar: 'DWFC' and Bacillus thuringiensis Berliner. For leaf-curl, which involves the insect whitefly (Bemisia tabaci Genn.) and virus as well as the complete-root parasite broomrape, no resistant genes are available. Hence bio-technological means have to be adopted, such as **transgenic plants**, protoplast fusion of interspecific hybrids, besides continuing effort to spot resistant genotypes from somaclonal variants and mutant populations. Many recently released varieties show good promise in yield and resistance to different factors. In flue-cured virginia tobacco, to meet the growing demand at home and abroad, the production is targetted to increase from 112 million kg in 1990 to 192 million kg in 1995 from Andhra Pradesh and Karnataka. The recently released high-yielding varieties 'Gautarni' and 'Virginia Tobacco 1158' (resistant to tobacco mosaic) in Andhra Pradesh, and 'Bhavya' (resistant to black-shank, tolerant to root-knot) and 'Swama'

(resistant to powdery mildew (Erysiphe cichoracearum DC.)) in Karnataka, show good potential of high yield. In bidi tobacco, in the prevailing conditions of fluctuation in area and production (due to inconsistent market trends and rainfall pattern) as well as increase in demand, the high-yielding varieties 'GT5' (tolerant to root-knot, high nicotine content of 8.62-9.00%, smooth smoke generating 30% less smoke toxicants) and 'GT7' (drought-tolerant) show good potential in Gujarat. In chewing tobacco, with uncertain rainfall, cost competition with other crops and lack of irrigation sources, 'Meenakshi'- the recently released high-yielding variety - shows good potential in Tamil Nadu for the small and scattered areas. It also fits well in the most effective maize (Zea mays L.)-tobacco-maize cropping system in Bihar, where 'Sona' and 'Pusa Tobacco 76' show good potential whereas in Gujarat the high-yielding varieties 'GT6' and 'GC1'-with an ability to succeed the principal food crop, rice (Oryza saliva L.)-show good potential. In natu tobacco the recently released variety 'Natu Special' (gt 25-30% yield compared with 'WAF') has good potential in cigarette natu tobacco-growing districts of Kurnool and Mahaboobnagar of Andhra Pradesh. The decennial tobacco productivity in India showed a progressive trend, with an increase of 58% for an tobaccos, 37% for flue-cured virginia and 66% for non-virginia tobacco from 1960-61 to 1990-91. Export of tobacco and tobacco products from India increased by 68% in quantity and 709% in value from 1970-71 to 1990-91. With present consumption trend of tobacco in different forms the world over, the tobacco export from India is likely to increase. Research is needed forbmeding less health-hazardous tobaccos, breeding tobaccos for abiotic and biotic stresses, utilization of heterosis for achieving stable yield under adverse conditions, breeding low-photorespiratory tobaccos, breeding genotypes with high potassium content for good quality, studies on leaf-surface chemistry for trichome exudates that influence resistance to pests and on organoleptic properties, and genetic tailoring of tobacco plants for alternative uses, besides its narcotic value.

L12 ANSWER 59 OF 95 BIOSIS COPYRIGHT 2000 BIOSIS
ACCESSION NUMBER: 1993:240372 BIOSIS
DOCUMENT NUMBER: PREV199344113572
TITLE: Role of viral movement proteins in the pathogenesis of squash leaf curl virus.
AUTHOR(S): Lazarowitz, Sondra G.; Pascal, Erica J.; Goodlove, Paige E.
CORPORATE SOURCE: Dep. Microbiol., Univ. Ill., Urbana, IL 61801 USA
SOURCE: Journal of Cellular Biochemistry Supplement, (1993) Vol. 0,
No. 17 PART A, pp. 33.
Meeting Info.: Keystone Symposium on the Extracellular Matrix of Plants: Molecular, Cellular and Developmental Biology Santa Fe, New Mexico, USA January 9-15, 1993
ISSN: 0733-1959.
DOCUMENT TYPE: Conference
LANGUAGE: English

L12 ANSWER 60 OF 95 BIOSIS COPYRIGHT 2000 BIOSIS
ACCESSION NUMBER: 1993:207406 BIOSIS
DOCUMENT NUMBER: PREV199395108631
TITLE: Stable transformation of Phaseolus vulgaris via electric-discharge mediated particle acceleration.
AUTHOR(S): Russell, D. R. (1); Wallace, K. M.; Bathe, J. H.; Martinell, B. J.; McCabe, D. E.
CORPORATE SOURCE: (1) Agracetus Inc., 8520 University Green, Middleton, WI 53562 USA

SOURCE: Plant Cell Reports, (1993) Vol. 12, No. 3, pp. 165-169.
ISSN: 0721-7714.
DOCUMENT TYPE: Article
LANGUAGE: English
AB Trangenic Phaseolus vulgaris or common bean has been produced using electric-discharge particle acceleration. The method uses particle acceleration to introduce DNA into bean seed meristems. Multiple shoots are then generated and screened to recover **transgenic plants** at a rate of 0.03% germline transformed plants/shoot. We have been able to recover **transgenic plants** using both GUS and herbicide screening to introduce the gus, bar, and bean golden mosaic virus coat protein genes into the navy bean cultivar, Seafarer. The **transgenic plants** have been characterized over 5 generations of self-fertilization with no loss of introduced genes or expression. In addition, several families have been crossed with non-transgenic parents and these plants also show expected inheritance patterns. The introduced bar gene has been shown to confer strong resistance in transgenic beans to basta herbicide application in the greenhouse.

L12 ANSWER 61 OF 95 BIOSIS COPYRIGHT 2000 BIOSIS
ACCESSION NUMBER: 1992:325907 BIOSIS
DOCUMENT NUMBER: BA94:27748
TITLE: REGULATION OF THE ACTIVITIES OF AFRICAN CASSAVA MOSAIC VIRUS PROMOTERS BY THE AC1 AC2 AND AC3 GENE PRODUCTS.
AUTHOR(S): HALEY A; ZHAN X; RICHARDSON K; HEAD K; MORRIS B
CORPORATE SOURCE: MOLECULAR BIOLOGY GROUP, DSIR PLANT PROTECTION, PRIVATE BAG, AUCKLAND, NEW ZEALAND.
SOURCE: VIROLOGY, (1992) 188 (2), 905-909.
CODEN: VIRLAX. ISSN: 0042-6822.
FILE SEGMENT: BA; OLD
LANGUAGE: English
AB DNA fragments comprising each of the promoter regions from the **geminivirus** African cassava mosaic virus (ACMV) were cloned into the pUC18-based vector, pG1, producing transcriptional fusions with the .beta.-glucuronidase gene (GUS) and nopaline synthase terminator sequence. The relative activity of each promoter construct was analyzed by a GUS expression assay of extracts from Nicotiana clevelandii protoplasts coelectroporated with the GUS reporter constructs and constructs in which individual ACMV open reading frames (ORFs) were placed under control of a cauliflower mosaic virus 35 S promoter. Results suggest repression of the AC1 gene by its gene product, which is required for ACMV DNA synthesis. The promoter activity observed for the single promoter for the DNA A genes encoding functions of spread and the regulation of replication (AC2 and AC3 ORFs) was unaffected by coelectroporation with any of the ACMV ORF constructs. Promoters for the AV1 (coat protein) gene and the two DNA B genes (BV1 and BC1) were activated by electroporation of the AC2 ORF constructs. To a lesser extent promoters for the AV1 and BV1 genes were activated with the AC3 ORF construct. The same pattern of promoter repression and activation was observed when transgenic N. benthamiana plants expressing the GUS reporter constructions were inoculated with ACMV DNA A.

L12 ANSWER 62 OF 95 BIOSIS COPYRIGHT 2000 BIOSIS
ACCESSION NUMBER: 1992:48077 BIOSIS
DOCUMENT NUMBER: BA93:28052

TITLE: ANALYSIS OF THE POTENTIAL PROMOTER SEQUENCES OF AFRICAN CASSAVA MOSAIC VIRUS BY TRANSIENT EXPRESSION OF THE BETA GLUCURONIDASE GENE.
AUTHOR(S): ZHAN X; HALEY A; RICHARDSON K; MORRIS B
CORPORATE SOURCE: MOL. BIOL. GROUP, DSIR PLANT PROTECTION, PRIVATE BAG, AUCKLAND, NEW ZEALAND.
SOURCE: J GEN VIROL, (1991) 72 (11), 2849-2852.
CODEN: JGVIAY. ISSN: 0022-1317.
FILE SEGMENT: BA; OLD
LANGUAGE: English

AB DNA fragments from promoter regions of the germinivirus, African cassava mosaic virus, were cloned into pG1, a vector based on pUC18, producing transcriptional fusions with the .beta.-glucuronidase (GUS) gene and nopaline synthase termination sequence. The activity of each promoter construct was assessed by analysing the transient expression of GUS in Nicotiana clevelandii protoplasts. The results demonstrated that constructs containing the common region of DNA A showed much stronger promoter activity in the complementary sense than in the viral sense. These results were supported by the analysis of promoter activity in transgenic N. benthamiana plants. In comparison, in protoplasts a region upstream of the AC2 open reading frame was shown to have moderate promoter activity. Unlike DNA A, the complementary sense DNA B promoter constructs had weak activity; the viral sense DNA B promoter constructs appeared to be regulated by host factors. The implications of these results for the regulation of early and late genes are discussed.

L12 ANSWER 63 OF 95 BIOSIS COPYRIGHT 2000 BIOSIS
ACCESSION NUMBER: 1990:131953 BIOSIS
DOCUMENT NUMBER: BA89:70764
TITLE: EXTRACHROMOSOMAL FORMS OF CLV DNA1 IN **TRANSGENIC PLANTS** ARE INHERITED BY SYMPTOM-FREE PROGENY.
AUTHOR(S): MEYER P; NIEDENHOF I; HEIDMANN I; SAEDLER H
CORPORATE SOURCE: MAX-DELBRUECK-LAB. MPG, CARL-VON-LINNE WEG 10 D-5000 KOELN 30, FRG.
SOURCE: PLANT SCI (SHANNON), (1989) 65 (2), 207-216.
CODEN: PLSCE4. ISSN: 0168-9452.
FILE SEGMENT: BA; OLD
LANGUAGE: English

AB Two full length copies of Cassava latent virus (CLV) DNA1 were cloned in head to tail arrangement on a plant expression vector to evaluate the potential of CLV for the development of an extrachromasomal vector system in plants. After direct transfer of the plasmid into protoplasts of Nicotiana tabacum cv. Petit Havana SR1 extrachromosomal single-stranded (ss) and double-stranded (ds) forms of DNA1 appeared after the first cell division of protoplasts. The extrachromosomal copies could also be detected within transformants which has been regenerated from kanamycin-resistant calli. The CLV-harbouring transformants do not display any symptoms usually observed after CLV infection. Stable conservation of extrachromosomal DNA1 was observed in F1 plants derived from self-pollination and in plants regenerated from protoplasts of transformants. Our data show that dimer constructs of CLV DNA1 are atractive candidates for an extrachromasomal plant vector system.

L12 ANSWER 64 OF 95 BIOSIS COPYRIGHT 2000 BIOSIS
ACCESSION NUMBER: 1988:230937 BIOSIS
DOCUMENT NUMBER: BR34:113457
TITLE: SYSTEMIC INFECTION OF PETUNIA BY MECHANICAL INOCULATION WITH TOMATO GOLDEN MOSAIC VIRUS.
AUTHOR(S): PETTY I T D; BUCK K W; COUTTS R H A

CORPORATE SOURCE: DEP. PLANT PATHOL., UNIV. CALIF., BERKELEY, CALIF. 94720, USA.
SOURCE: Neth. J. Plant Pathol., (1988) 94 (1), 3-7.
CODEN: NJPPAM. ISSN: 0028-2944.
FILE SEGMENT: BR; OLD
LANGUAGE: English

L12 ANSWER 65 OF 95 BIOSIS COPYRIGHT 2000 BIOSIS
ACCESSION NUMBER: 1986:323387 BIOSIS
DOCUMENT NUMBER: BA82:47692
TITLE: TOMATO GOLDEN MOSAIC VIRUS A COMPONENT DNA REPLICATES AUTONOMOUSLY IN **TRANSGENIC PLANTS**.
AUTHOR(S): ROGERS S G; BISARO D M; HORSCH R B; FRALEY R T; HOFFMANN N L; BRAND L; ELMER J S; LLOYD A M
CORPORATE SOURCE: MONSANTO CO., 700 CHESTERFIELD VILLAGE PARKWAY, ST. LOUIS, MO. 63198.
SOURCE: CELL, (1986) 45 (4), 593-600.
CODEN: CELLB5. ISSN: 0092-8674.
FILE SEGMENT: BA; OLD
LANGUAGE: English
AB Phenotypically normal petunia plants carrying chromosomal inserts of either the tomato golden mosaic virus (TGMV) A or the B component DNA, as single or tandem inserts, were obtained using an Agrobacterium tumefaciens Ti plasmid-based transformation system. Southern hybridization analysis revealed that the tandem, direct-repeat A plants contained free single and double stranded A component DNAs. No free B component DNA was detected in plants carrying tandem repeats of the B component. Progeny of self-fertilized plants appeared normal. In contrast, one-quarter of the progeny from tandem A by tandem B plant crosses showed chlorotic lesions on their leaves similar to virus symptoms. The significance of these results and the use of this method for the study of virus functions involved in TGMV replication and symptom production are discussed.

L12 ANSWER 66 OF 95 EMBASE COPYRIGHT 2000 ELSEVIER SCI. B.V.
ACCESSION NUMBER: 93079653 EMBASE
DOCUMENT NUMBER: 1993079653
TITLE: **Geminiviruses**: Plant viral vectors.
AUTHOR: Stanley J.
CORPORATE SOURCE: Department of Virus Research, John Innes Institute, Colney Lane,Norwich NR4 7UH, United Kingdom
SOURCE: Current Opinion in Genetics and Development, (1993) 3/1 (91-96).
ISSN: 0959-437X CODEN: COGDET
COUNTRY: United Kingdom
DOCUMENT TYPE: Journal; General Review
FILE SEGMENT: 004 Microbiology
022 Human Genetics
LANGUAGE: English
SUMMARY LANGUAGE: English

L12 ANSWER 67 OF 95 EMBASE COPYRIGHT 2000 ELSEVIER SCI. B.V.
ACCESSION NUMBER: 91303552 EMBASE
DOCUMENT NUMBER: 1991303552
TITLE: Expression of an antisense viral gene in transgenic tobacco confers resistance to the DNA virus tomato golden mosaic virus.
AUTHOR: Day A.G.; Bejarano E.R.; Buck K.W.; Burrell M.; Lichtenstein C.P.

CORPORATE SOURCE: Centre for Biotechnology, Imperial College of Science, Exhibition Road,London SW7 2AZ, United Kingdom
SOURCE: Proceedings of the National Academy of Sciences of the United States of America, (1991) 88/15 (6721-6725). ISSN: 0027-8424 CODEN: PNASA6
COUNTRY: United States
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 029 Clinical Biochemistry
LANGUAGE: English
SUMMARY LANGUAGE: English

AB Transgenic tobacco plants carrying a genetic cassette including an antisense DNA sequence of the virally encoded AL1 gene of the **geminivirus** tomato golden mosaic virus (TGMV) were constructed; AL1 encodes a protein absolutely required for TGMV DNA replication. These genetic cassettes also contained, on the same transcription unit, a gene encoding hygromycin resistance, which allowed selection for concomitant expression of the antisense gene. In transgenic lines, RNA transcripts of the predicted size and strand specificity were detected in antisense plants and sense controls. After infection of plants with TGMV, by agroinoculation, the frequency of symptom development was very significantly reduced in a number of antisense lines and correlated, broadly, with the abundance of antisense RNA transcript and with a reduction in viral DNA harvested from infected leaf tissue. We used an in vitro assay to study viral DNA replication in the absence of cell-to-cell spread; no replication was seen in five of the six antisense lines studied, in contrast to controls.

L12 ANSWER 68 OF 95 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 97:298450 SCISEARCH
THE GENUINE ARTICLE: WT189
TITLE: The **geminivirus** BL1 movement protein is associated with endoplasmic reticulum-derived tubules in developing phloem cells
AUTHOR: Ward B M; Medville R; Lazarowitz S G (Reprint); Turgeon R
CORPORATE SOURCE: UNIV ILLINOIS, DEPT MICROBIOL, 131 BURRILL HALL, URBANA, IL 61801 (Reprint); UNIV ILLINOIS, DEPT MICROBIOL, URBANA, IL 61801; ELECTRON MICROSCOPY SERV, ITHACA, NY 14853; CORNELL UNIV, DIV BIOL SCI, PLANT BIOL SECT, ITHACA, NY 14853
COUNTRY OF AUTHOR: USA
SOURCE: JOURNAL OF VIROLOGY, (MAY 1997) Vol. 71, No. 5, pp. 3726-3733. Publisher: AMER SOC MICROBIOLOGY, 1325 MASSACHUSETTS AVENUE, NW, WASHINGTON, DC 20005-4171. ISSN: 0022-538X.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: English
REFERENCE COUNT: 66

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Plant viruses encode movement proteins that are essential for systemic infection of their host but dispensable for replication and encapsidation.

BL1, one of the two movement proteins encoded by the bipartite **geminivirus** squash leaf curl virus, was immunolocalized to unique similar to 40-nm tubules that extended up to and across the walls of procambial cells in systemically infected pumpkin leaves, These tubules were not found in procambial cells from pumpkin seedlings inoculated with BL1 mutants that are defective in movement. The tubules also specifically stained with antisera to binding protein (BiP), indicating that they were

derived from the endoplasmic reticulum. Independent confirmation of this endoplasmic reticulum association was obtained by subcellular fractionation studies in which BL1 was localized to fractions that contained both endoplasmic reticulum membranes and BiP. Thus, squash leaf curl virus appears to recruit the endoplasmic reticulum as a conduit for cell-to-cell movement of the viral genome.

L12 ANSWER 69 OF 95 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 97:253403 SCISEARCH
THE GENUINE ARTICLE: WP583
TITLE: Expression of functional elements inserted into the 35S promoter region of infectious cauliflower mosaic virus replicons
AUTHOR: Noad R J; Turner D S; Covey S N (Reprint)
CORPORATE SOURCE: JOHN INNES CTR PLANT SCI RES, DEPT VIRUS RES, NORWICH RES PK, NORWICH NR4 7UH, NORFOLK, ENGLAND (Reprint); JOHN INNES CTR PLANT SCI RES, DEPT VIRUS RES, NORWICH NR4 7UH, NORFOLK, ENGLAND
COUNTRY OF AUTHOR: ENGLAND
SOURCE: NUCLEIC ACIDS RESEARCH, (15 MAR 1997) Vol. 25, No. 6, pp. 1123-1129.
Publisher: OXFORD UNIV PRESS UNITED KINGDOM, WALTON ST JOURNALS DEPT, OXFORD, ENGLAND OX2 6DP.
ISSN: 0305-1048.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: English
REFERENCE COUNT: 42
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB We describe experiments directed towards development of cauliflower mosaic virus (CaMV) replicons for propagation of functional elements during infection of plants. Modifications and inserts were introduced into replaceable domains associated with the 35S promoter. The 35S enhancer (-208 to -56) was found to potentiate promoter activity when in reverse orientation sufficient to establish systemic infection. However, replacement of the 35S enhancer with that from the nos promoter caused loss of infectivity. A 31 bp oligonucleotide containing a polypurine tract specifying initiation of CaMV plus strand DNA synthesis was inserted into a 35S enhancer deletion mutant and propagated in plants. Analysis of progeny DNA showed the presence of an additional discontinuity at its new location in the 35S enhancer, indicating that the artificial primer had functioned correctly in an ectopic site. An intron and flanking sequences from the RNA leader of the Arabidopsis phytoene desaturase (pds) gene, when inserted into the 35S enhancer in forward orientation was very efficiently spliced during infection. The CaMV replicon carrying the pds gene fragment produced unusual infection characteristics, with plants showing early symptoms and then recovering. We conclude that infectious CaMV replicons can be used to carry a variety of elements that target both viral and host functions.

L12 ANSWER 70 OF 95 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 97:187684 SCISEARCH
THE GENUINE ARTICLE: WK716
TITLE: Expression of the potato leafroll virus ORF0 induces viral-disease-like symptoms in transgenic potato plants
AUTHOR: vanderWilk F (Reprint); Houterman P; Molthoff J; Hans F; Dekker B; vandenHeuvel J; Huttinga H; Goldbach R
CORPORATE SOURCE: DLO, RES INST PLANT PROTECT, IPO, POB 9060, NL-6700 GW

WAGENINGEN, NETHERLANDS (Reprint); AGR UNIV WAGENINGEN, DEPT VIROL, NL-6700 EM WAGENINGEN, NETHERLANDS; MOGEN INT NV, NL-2333 CB LEIDEN, NETHERLANDS
COUNTRY OF AUTHOR: NETHERLANDS
SOURCE: MOLECULAR PLANT-MICROBE INTERACTIONS, (MAR 1997) Vol. 10, No. 2, pp. 153-159.
Publisher: AMER PHYTOPATHOLOGICAL SOC, 3340 PILOT KNOB ROAD, ST PAUL, MN 55121.
ISSN: 0894-0282.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE; AGRI
LANGUAGE: English
REFERENCE COUNT: 39

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB The role of the open reading frame 0 (ORF0) of luteoviruses in the viral infection cycle has not been resolved, although the translation product (p28) of this ORF has been suggested to play a role in host recognition, To investigate the function of the potato leafroll luteovirus (PLRV) p28 protein, transgenic potato plants were produced containing the ORF0. In the lines in which the ORF0 transcripts could be detected by Northern (RNA) analysis, the plants displayed an altered phenotype resembling virus-infected plants. A positive correlation was observed between levels of accumulation of the transgenic transcripts and severity of the phenotypic aberrations observed, In contrast, potato plants transformed with a modified, untranslatable ORF0 sequence were phenotypically indistinguishable from wild-type control plants. These results suggest that the p28 protein is involved in viral symptom expression, Southern blot analysis showed that the **transgenic plants** that accumulated low levels of ORF0 transcripts detectable only by reverse transcription-polymerase chain reaction, contained methylated ORF0 DNA sequences, indicating down-regulation of the transgene provoked by the putatively unfavorable effects p28 causes in the plant cell.

L12 ANSWER 71 OF 95 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 96:886799 SCISEARCH
THE GENUINE ARTICLE: VV009
TITLE: The role of AV2 (''precoat'') and coat protein in viral replication and movement in tomato leaf curl **geminivirus**
AUTHOR: Padidam M; Beachy R N; Fauquet C M (Reprint)
CORPORATE SOURCE: SCRIPPS CLIN & RES INST, ORSTOM, TSRI, INT LAB TROP AGR BIOTECHNOL, DIV PLANT BIOL BCC206, LA JOLLA, CA 92037 (Reprint); SCRIPPS CLIN & RES INST, ORSTOM, TSRI, INT LAB TROP AGR BIOTECHNOL, DIV PLANT BIOL BCC206, LA JOLLA, CA 92037
COUNTRY OF AUTHOR: USA
SOURCE: VIROLOGY, (15 OCT 1996) Vol. 224, No. 2, pp. 390-404.
Publisher: ACADEMIC PRESS INC JNL-COMP SUBSCRIPTIONS, 525 B ST, STE 1900, SAN DIEGO, CA 92101-4495.
ISSN: 0042-6822.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: English
REFERENCE COUNT: 50

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB We analyzed various mutants of tomato leaf curl virus-India to investigate the role of ORFs AV3, AV2, and coat protein (CP) in viral replication, movement, and symptom development. The results of these

studies indicate that ORF AV3 does not encode a protein. Plants inoculated with infectious DNA which contained deletions in AV2 developed very mild symptoms and accumulated only low levels oi both single-stranded (ss) and double-stranded (ds) viral DNA, whereas inoculated protoplasts accumulated both ss and dsDNA to wild-type levels, showing that AV2 is required for efficient viral movement. However, both plants and protoplasts inoculated with substitution, frameshift, and other similar mutations in AV2 accumulated low levels of viral DNA. The low levels oi accumulation of DNA of these mutants were apparently not due to a defect in AV2 synthesis. Mutations in the CP caused a marked decrease in ssDNA accumulation in plants and protoplasts while increasing dsDNA accumulation in protoplasts, Mutations in both AV2 and CP behaved like AV2 mutants in plants and like CP mutants in protoplasts. The results demonstrated that multiple functions provided by AV2, BV1, and BC1 are essential for viral movement, and that changes in A-component virion-sense mRNA structure or translation affect viral replication. (C) 1996 Academic Press, Inc.

L12 ANSWER 72 OF 95 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 96:694567 SCISEARCH
THE GENUINE ARTICLE: VH248
TITLE: FUNCTIONAL-STUDIES OF COMPLEMENTARY SENSE PROMOTER (REPLICASE PROMOTER) FROM TOMATO YELLOW LEAF CURL VIRUS - EVIDENCE FOR TRANSCRIPTION CAPABILITY IN NONHOST PLANTS
AUTHOR: ABDALLAH N A (Reprint); ABOUSALHA A; SOLIMAN M H
CORPORATE SOURCE: CAIRO UNIV, FAC AGR, DEPT GENET, CAIRO, EGYPT (Reprint)
COUNTRY OF AUTHOR: EGYPT
SOURCE: JOURNAL OF PHYTOPATHOLOGY-PHYTOPATHOLOGISCHE ZEITSCHRIFT,
(MAY 1996) Vol. 144, No. 5, pp. 251-256.
ISSN: 0931-1785.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: AGRI
LANGUAGE: ENGLISH
REFERENCE COUNT: 27

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB The complementary sense promoter C-1 that regulates the transcription of replicase gene in **geminiviruses** was cloned from tomato yellow leaf curl virus. A transcription fusion of beta-glucuronidase gene (GUS) coding sequence to complementary sense promoter, that replaced the viral replicase coding sequence, was constructed. Protoplasts of Nicotiana tabacum were electroporated to introduce the GUS gene controlled by the C-1 promoter. The level of GUS transient gene expression was enhanced by the increase of the plasmid DNA concentration. Fluorometric GUS assays showed that the C-1 promoter has a lower expression compared to the e35S promoter. Bombardment of the constructed plasmid, containing C-1 promoter-GUS ORF-NOS terminator (pKSIR-E), was performed to different plant genetic backgrounds and followed by the histochemical GUS assays. The results showed that there were GUS activities expressed in tomato (Lycopersicon esculentum), tobacco (Nicotiana tabacum) and datura (Datura stramonium), as host plants. While in non-host plants, the GUS activities were observed in faba bean (Vicia faba) and squash (Cucurbita pepo), as examples of dicot plants, but not in maize (Zea mays) as a representative of monocote.

L12 ANSWER 73 OF 95 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 96:672273 SCISEARCH

THE GENUINE ARTICLE: VF962
TITLE: GENETIC REQUIREMENTS FOR LOCAL AND SYSTEMIC MOVEMENT OF TOMATO GOLDEN MOSAIC-VIRUS IN INFECTED PLANTS
AUTHOR: JEFFREY J L; POOMA W; PETTY I T D (Reprint)
CORPORATE SOURCE: N CAROLINA STATE UNIV, DEPT MICROBIOL, RALEIGH, NC, 27695 (Reprint); N CAROLINA STATE UNIV, DEPT MICROBIOL, RALEIGH, NC, 27695
COUNTRY OF AUTHOR: USA
SOURCE: VIROLOGY, (01 SEP 1996) Vol. 223, No. 1, pp. 208-218. ISSN: 0042-6822.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 27

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Tomato golden mosaic **geminivirus** (TGMV) has two DNA components, A and B. Replication of DNA A can be detected in inoculated leaves, but DNA B is additionally required for virus movement in planta. Using viral DNA accumulation as an indication of the number of infected cells, we show here that both the BL1 and BR1 genes are necessary for local TGMV movement. We also demonstrate that transient expression of BL1 and BR1 together allows wild-type TGMV DNA A to move systemically. When the transient movement assay was used to analyze various A component mutants, all were found to move locally in inoculated leaves, and only an art (coal protein) mutant was unable to move systemically. In addition, we confirm that a TGMV a/2 (AR1 and BR1 trans-activator) mutant has a defect in local movement which can be rescued by provision of exogenous BR1, but not BL1. Finally, we show that the ability of TGMV coat protein mutants to accumulate single-stranded (ss) DNA is dependent on BR1. These results provide experimental evidence obtained in planta which supports three predictions of published models for bipartite **geminivirus** movement: (i) BL1 and BR1 have distinct and essential roles in cell-to-cell movement as well as systemic movement; (ii) BR1 may interact with viral ssDNA in vivo; and (iii) AL2 is indirectly required for movement through its effect on BR1 expression. In addition, our data suggest that specific models of bipartite **geminivirus** systemic movement should accommodate a role for the coat protein. (C) 1996 Academic Press, Inc.

L12 ANSWER 74 OF 95 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 96:443917 SCISEARCH
THE GENUINE ARTICLE: UP568
TITLE: THE PRODUCT OF MAIZE STREAK VIRUS ORF V1 IS ASSOCIATED WITH SECONDARY PLASMODESMATA AND IS FIRST DETECTED WITH THE ONSET OF VIRAL LESIONS
AUTHOR: DICKINSON V J; HALDER J; WOOLSTON C J (Reprint)
CORPORATE SOURCE: UNIV HULL, DEPT APPL BIOL, COTTINGHAM RD, KINGSTON UPON HULL HU6 7RX, N HUMBERSIDE, ENGLAND (Reprint); UNIV HULL, DEPT APPL BIOL, KINGSTON UPON HULL HU6 7RX, N HUMBERSIDE, ENGLAND
COUNTRY OF AUTHOR: ENGLAND
SOURCE: VIROLOGY, (01 JUN 1996) Vol. 220, No. 1, pp. 51-59. ISSN: 0042-6822.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 44

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB We have used a polyclonal antiserum derived from a bacterially expressed viral fusion protein to investigate the expression and subcellular localisation of the maize streak virus V1 product (PV1). Western blot analysis of agroinfected tissue showed that PV1 was detectable from 10 days postinoculation, coinciding with the first appearance of chlorotic viral lesions. The viral protein was only detectable in cell wall fractions of plant protein extracts. PV1 migrated with an apparent size of 14 kDa on SDS-PAGE, larger than the 10.9 kDa predicted from the amino acid sequence and therefore suggestive of posttranslational modification. Immunogold labelling located PV1 to the cell walls within lesion tissue and demonstrated a close association between the viral protein and secondary plasmodesmata. These results are consistent with the V1 product of MSV playing a role in the cell-to-cell movement of the virus in infected plants. (C) 1996 Academic Press, Inc.

L12 ANSWER 75 OF 95 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 95:759990 SCISEARCH
THE GENUINE ARTICLE: TC058
TITLE: PSEUDORECOMBINATION AND COMPLEMENTATION BETWEEN POTATO YELLOW MOSAIC **GEMINIVIRUS** AND TOMATO GOLDEN MOSAIC **GEMINIVIRUS**
AUTHOR: SUNG Y K; COUTTS R H A (Reprint)
CORPORATE SOURCE: UNIV LONDON IMPERIAL COLL SCI TECHNOL & MED, DEPT BIOL, PRINCE CONSORT RD, LONDON SW7 2BB, ENGLAND (Reprint); UNIV LONDON IMPERIAL COLL SCI TECHNOL & MED, DEPT BIOL, LONDON SW7 2BB, ENGLAND
COUNTRY OF AUTHOR: ENGLAND
SOURCE: JOURNAL OF GENERAL VIROLOGY, (NOV 1995) Vol. 76, Part 11, pp. 2809-2815.
ISSN: 0022-1317.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 36

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Pseudorecombinants made by exchanging the cloned, infectious genome components (DNAs A and B) of potato yellow mosaic **geminivirus** (PYMV) and the common strain (cs) of tomato golden mosaic **geminivirus** (csTGMV) are not infectious in their common host Nicotiana benthamiana. In an N. benthamiana leaf disc assay neither PYMV DNA A nor TGMV DNA A trans-replicated each other's DNA B component. The ability of PYMV and TGMV to mediate the systemic movement of each other's DNA A was investigated following coinoculation of N. benthamiana with both genome components of one virus (the helper virus) and DNA A of the other virus (the dependent virus). Movement of the dependent virus DNA A in both cases illustrates interchangeability between the DNA B-encoded movement proteins of New World **geminiviruses** which infect solanaceous hosts. We have studied this genetic interchangeability further in separate co-agroinoculation experiments with N. benthamiana plants using TGMV DNA A to complement mutations in PYMV open reading frame (ORF) AC2, which encodes a protein that trans-activates the expression of virion sense promoters, and in PYMV ORF AC3, which specifies a protein that enhances viral DNA replication. TGMV DNA A complemented a PYMV AC2 mutant and restored its infectivity and it also complemented a PYMV AC3 mutant and restored the reduced DNA phenotype.

L12 ANSWER 76 OF 95 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 94:587902 SCISEARCH
THE GENUINE ARTICLE: PG067
TITLE: MOVEMENT OF TOMATO YELLOW LEAF CURL **GEMINIVIRUS** (TYLCV) - INVOLVEMENT OF THE PROTEIN ENCODED BY ORF C4
AUTHOR: JUPIN I (Reprint); DEKOUCHKOVSKY F; JOUANNEAU F; GRONENBORN B
CORPORATE SOURCE: CNRS, INST SCI VEGETALES, AVE TERRASSE, F-91198 GIF SUR YVETTE, FRANCE (Reprint)
COUNTRY OF AUTHOR: FRANCE
SOURCE: VIROLOGY, (OCT 1994) Vol. 204, No. 1, pp. 82-90. ISSN: 0042-6822.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 52

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Tomato yellow leaf curl virus (TYLCV) is a whitefly-transmitted **geminivirus** with a monopartite genome. We have investigated the ability of a TYLCV DNA mutant containing a disrupted ORF C4 to infect Nicotiana benthamiana and tomato plants. The mutant retained the capability of autonomous replication in protoplast-derived cells of tomato and was able to infect N. benthamiana plants systemically although DNA levels were reduced and symptom development was attenuated. However, when tomato plants were inoculated, the virus was unable to move systemically unless a second site mutation or a reversion in planta restored the integrity of ORF C4. The infected plants remained asymptomatic or showed very mild symptoms. The results strongly suggest that the ORF C4 encodes a protein involved in virus movement, a novel finding for whitefly-transmitted **geminiviruses**. The involvement of a C4 protein in symptom determination is discussed, (C) 1994 Academic Press, Inc.

L12 ANSWER 77 OF 95 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 94:217419 SCISEARCH
THE GENUINE ARTICLE: NE612
TITLE: SIMULTANEOUS REGULATION OF TOMATO GOLDEN MOSAIC-VIRUS COAT PROTEIN AND AL1 GENE-EXPRESSION - EXPRESSION OF THE AL4 GENE MAY CONTRIBUTE TO SUPPRESSION OF THE AL1 GENE
AUTHOR: GRONING B R; HAYES R J; BUCK K W (Reprint)
CORPORATE SOURCE: UNIV LONDON IMPERIAL COLL SCI TECHNOL & MED, DEPT BIOL, PRINCE CONSORT RD, LONDON SW7 2BB, ENGLAND (Reprint); UNIV LONDON IMPERIAL COLL SCI TECHNOL & MED, DEPT BIOL, LONDON SW7 2BB, ENGLAND
COUNTRY OF AUTHOR: ENGLAND
SOURCE: JOURNAL OF GENERAL VIROLOGY, (APR 1994) Vol. 75, Part 4, pp. 721-726. ISSN: 0022-1317.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 38

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB The tomato golden mosaic virus (TGMV) coat protein and AL1 genes are located in opposite directions on either side of an intergenic region. To enable the effects of the AL1, AL2 and AL3 gene products on expression of

the coat protein and AL1 genes to be studied simultaneously, a plasmid was constructed, containing the intergenic region linked on one side to a 5'-terminal portion of the ALI gene fused to a P-glucuronidase (GUS) reporter gene (to replace most of the AL1 gene) and on the other side to a neomycin phosphotransferase (NEO) reporter gene (to replace the coat protein gene). This GUS-NEO plasmid was mixed with plant expression plasmids containing the AL1, AL2 or AL3 coding regions, the DNA was transformed into Nicotiana benthamiana protoplasts and GUS activities and NEO protein levels were measured. Control transformations were carried out with the GUS-NEO plasmid mixed with the AL1, AL2 or AL3 plasmids in which mutations were introduced to prevent translation of the open reading frames (ORFs). The results showed that transactivation of the coat protein gene by the AL2 gene product and suppression of the AL1 gene by the expression of AL1 DNA (both reported previously) can occur simultaneously.

It was also shown that expression of AL4, a small ORF contained within AL1 DNA but in a different reading frame, as well as expression of ORF AL1, can cause significant suppression of AL1 gene expression. Neither the AL1 nor the AL3 gene products affected the expression of the coat protein gene.

L12 ANSWER 78 OF 95 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 94:195315 SCISEARCH
THE GENUINE ARTICLE: NA578
TITLE: REQUIREMENT OF THE COMMON REGION OF DNA-B AND THE BL1 OPEN READING FRAME OF BEAN GOLDEN MOSAIC **GEMINIVIRUS** FOR INFECTION OF PHASEOLUS-VULGARIS
AUTHOR: SMITH D R (Reprint); MAXWELL D P
CORPORATE SOURCE: UNIV WISCONSIN, DEPT PLANT PATHOL, MADISON, WI, 53706 (Reprint)
COUNTRY OF AUTHOR: USA
SOURCE: PHYTOPATHOLOGY, (FEB 1994) Vol. 84, No. 2, pp. 133-138. ISSN: 0031-949X.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: AGRI
LANGUAGE: ENGLISH
REFERENCE COUNT: 43

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Infectious clones of bean golden mosaic **geminivirus** (BGMV) can be inoculated onto the economically important host Phaseolus vulgaris, causing a reaction indistinguishable from that seen in the field. To elucidate the functions of the BGMV genome in beans, six clones, each with a point mutation, insertion, or deletion in the common region or BL1 open reading frame (ORF) of DNA-B of BGMV (Guatemalan isolate), were constructed. These clones were coinoculated with wild-type DNA-A of BGMV into bean radicles (P. vulgaris) by particle acceleration to determine the effect of the mutations on infectivity. Four mutants caused symptoms ranging from very mild mosaic to wild-type mosaic. Two mutants did not cause systemic infection: one that should have produced a truncated BL1 protein and another in which a 74-nucleotide section of the common region, including a putative stem-loop, was removed. We conclude that the BL1 ORF

and the area of the DNA-B common region containing the putative stem-loop are required for systemic infection of P. vulgaris.

L12 ANSWER 79 OF 95 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 94:193973 SCISEARCH
THE GENUINE ARTICLE: ND076
TITLE: **GEMINIVIRUS** REPLICATION ORIGINS HAVE A MODULAR ORGANIZATION
AUTHOR: FONTES E P B; GLADFELTER H J; SCHAFFER R L; PETTY I T D; HANLEYBOWDOIN L (Reprint)
CORPORATE SOURCE: N CAROLINA STATE UNIV, DEPT BIOCHEM, POB 7622, RALEIGH, NC, 27695 (Reprint); N CAROLINA STATE UNIV, DEPT BIOCHEM, POB 7622, RALEIGH, NC, 27695; N CAROLINA STATE UNIV, DEPT MICROBIOL, RALEIGH, NC, 27695
COUNTRY OF AUTHOR: USA
SOURCE: PLANT CELL, (MAR 1994) Vol. 6, No. 3, pp. 405-416. ISSN: 1040-4651.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE; AGRI
LANGUAGE: ENGLISH
REFERENCE COUNT: 62

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Tomato golden mosaic virus (TGMV) and bean golden mosaic virus (BGMV) are closely related **geminiviruses** with bipartite genomes. The A and B DNA components of each virus have cis-acting sequences necessary for replication, and their A components encode trans-acting factors required for this process. We showed that virus-specific interactions between the cis- and trans-acting functions are required for TGMV and BGMV replication in tobacco protoplasts. We also demonstrated that, similar to the essential TGMV AL1 replication protein, BGMV AL1 binds specifically to its origin in vitro and that neither TGMV nor BGMV AL1 proteins bind to the heterologous origin. The in vitro AL1 binding specificities of the B components were exchanged by site-directed mutagenesis, but the resulting mutants were not replicated by either A component. These results showed that the high-affinity AL1 binding site is necessary but not sufficient for virus-specific origin activity in vivo. **Geminivirus** genomes also contain a stem-loop sequence that is required for origin function. A BGMV B mutant with the TGMV stem-loop sequence was replicated by BGMV A, indicating that BGMV AL1 does not discriminate between the two sequences. A BGMV B double mutant, with the TGMV AL1 binding site and stem-loop sequences, was not replicated by either A component, indicating that an additional element in the TGMV origin is required for productive interaction with TGMV AL1. These results suggested that **geminivirus** replication origins are composed of at least three functional modules: (1) a putative stem-loop structure that is required for replication but does not contribute to virus-specific recognition of the origin, (2) a specific high-affinity binding site for the AL1 protein, and (3) at least one additional element that contributes to specific origin recognition by viral trans-acting factors.

L12 ANSWER 80 OF 95 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 94:152444 SCISEARCH
THE GENUINE ARTICLE: NB409
TITLE: INTERACTION BETWEEN A **GEMINIVIRUS** REPLICATION PROTEIN AND ORIGIN DNA IS ESSENTIAL FOR VIRAL REPLICATION
AUTHOR: FONTES E P B; EAGLE P A; SIPE P S; LUCKOW V A; HANLEYBOWDOIN L (Reprint)

CORPORATE SOURCE: N CAROLINA STATE UNIV, DEPT BIOCHEM, BOX 7622, RALEIGH, NC, 27695 (Reprint); N CAROLINA STATE UNIV, DEPT BIOCHEM, RALEIGH, NC, 27695; MONSANTO CO, CORP RES, ST LOUIS, MO, 63198
COUNTRY OF AUTHOR: USA
SOURCE: JOURNAL OF BIOLOGICAL CHEMISTRY, (18 MAR 1994) Vol. 269, No. 11, pp. 8459-8465.
ISSN: 0021-9258.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 60

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB The **geminivirus**, tomato golden mosaic virus (TGMV), encodes one protein, AL1, that is absolutely required for viral DNA replication. AL1 interacts with the TGMV DNA genome by binding specifically to the viral origin of replication. We have investigated the nature and significance of AL1/origin interactions in vitro and in vivo by using competitive DNA binding and transient replication assays. Competition assays established that a 13-base pair (bp) element (5'-GGTAGTAAGGTAG) containing two 5-bp direct repeat motifs separated by a 3-bp central core constitutes a high affinity AL1 binding site. DNAs containing intact 3' repeat sequences plus core (TAAGGTAG and ccTAGTAAGGTAG) were stronger competitors for AL1 binding than DNAs containing intact 5' repeat sequences plus core (GGTAGTAA and GGTAGTA-AccTAG), thereby demonstrating that AL1 interacts differently with the repeat motifs. Replication in tobacco protoplasts established that the AL1 binding site is an essential cis-acting element for viral replication. No replication was detected for DNAs containing mutations in either of the repeat motifs of the AL1 recognition sequence when AL1 was provided in trans from a plant gene expression vector. In contrast, a DNA with a mutation in the 5' repeat motif (ccTAGTAAGGTAG) replicated when both AL1 and AL3, a TGMV protein involved in viral DNA accumulation, were provided in trans. No replication was detected for a DNA containing a mutation in the 3' repeat motif (GGTAGTAAccTAG) in the presence of AL1 and AL3. The in vitro and in vivo results suggest that binding of AL1 to the 3' repeat element is an essential step in DNA replication, while binding to the 5' repeat element may serve to enhance viral replication.

L12 ANSWER 81 OF 95 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 93:589046 SCISEARCH
THE GENUINE ARTICLE: LZ087
TITLE: REPLICATION OF TOMATO YELLOW LEAF CURL VIRUS (TYLCV) DNA IN AGROINOCULATED LEAF-DISKS FROM SELECTED TOMATO GENOTYPES
AUTHOR: CZOSNEK H (Reprint); KHEYRPOUR A; GRONENBORN B; REMETZ E; ZEIDAN M; ALTMAN A; RABINOWITCH H D; VIDAVSKY S; KEDAR N; GAFNI Y; ZAMIR D
CORPORATE SOURCE: HEBREW UNIV JERUSALEM, FAC AGR, DEPT FIELD & VEGETABLE CROPS, POB 12, IL-76100 REHOVOT, ISRAEL (Reprint); OTTO WARBURG CTR BIOTECHNOL AGR, IL-76100 REHOVOT, ISRAEL; CNRS, INST SCI VEGETALES, F-91198 GIF SUR YVETTE, FRANCE; AGR RES ORG, INST FIELD & GARDEN CROPS, DEPT GENET, IL-50250 BET DAGAN, ISRAEL
COUNTRY OF AUTHOR: ISRAEL; FRANCE
SOURCE: PLANT MOLECULAR BIOLOGY, (SEP 1993) Vol. 22, No. 6, pp. 995-1005.
ISSN: 0167-4412.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE; AGRI

LANGUAGE: ENGLISH
REFERENCE COUNT: 29
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB The leaf disc agroinoculation system was applied to study tomato yellow leaf curl virus (TYLCV) replication in explants from susceptible and resistant tomato genotypes. This system was also evaluated as a potential selection tool in breeding programmes for TYLCV resistance. Leaf discs were incubated with a head-to-tail dimer of the TYLCV genome cloned into the Ti plasmid of Agrobacterium tumefaciens. In leaf discs from susceptible cultivars (Lycopersicon esculentum) TYLCV single-stranded genomic DNA and its double-stranded DNA forms appeared within 2-5 days after inoculation. Whiteflies (Bemisia tabaci) efficiently transmitted the TYLCV disease to tomato test plants following acquisition feeding on agroinoculated tomato leaf discs. This indicates that infective viral particles have been produced and have reached the phloem cells of the explant where they can be acquired by the insects. Plants regenerated from agroinfected leaf discs of sensitive tomato cultivars exhibited disease symptoms and contained TYLCV DNA concentrations similar to those present in field-infected tomato plants, indicating that TYLCV can move out from the leaf disc into the regenerating plant. Leaf discs from accessions of the wild tomato species immune to whitefly-mediated inoculation, L. chilense LA1969 and L. hirsutum LA1777, did not support TYLCV DNA replication. Leaf discs from plants tolerant to TYLCV issued from breeding programmes behaved like leaf discs from susceptible cultivars.

L12 ANSWER 82 OF 95 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 93:321213 SCISEARCH
THE GENUINE ARTICLE: LC393
TITLE: TRANSFECTION OF WHOLE PLANTS FROM WOUNDS INOCULATED WITH AGROBACTERIUM-TUMEFACIENS CONTAINING CDNA OF TOBACCO MOSAIC-VIRUS
AUTHOR: TURPEN T H (Reprint); TURPEN A M; WEINZETTL N; KUMAGAI M H; DAWSON W O
CORPORATE SOURCE: BIOSOURCE GENET CORP, 3333 VACA VALLEY PKWY, VACAVILLE, CA, 95688 (Reprint); UNIV CALIF RIVERSIDE, DEPT PLANT PATHOL, RIVERSIDE, CA, 92521
COUNTRY OF AUTHOR: USA
SOURCE: JOURNAL OF VIROLOGICAL METHODS, (MAY 1993) Vol. 42, No. 2-3, pp. 227-240.
ISSN: 0166-0934.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 32
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB We engineered cDNA of tobacco mosaic tobamovirus (TMV) into Agrobacterium tumefaciens for inoculation of plant cells. The resulting bacterial strains were used to transfect tobacco (Nicotiana tabacum cv. Xanthi and Xanthi/nc) with wild type and a defective virus. Lesion formation on Xanthi/nc tobacco was used to measure the timing and efficiency of transfection. Infections mediated by Agrobacterium produced lesions an average of two days later than infections produced by inoculation with virions. The addition of approximately 80 bp of non-viral sequences to the 5'-end of TMV transcripts abolished transfection. Transcripts with non-viral sequences at the 3'-end initiated infections, while precise transcript termination with a synthetic ribozyme sequence

increased transfection frequencies two-fold. Culture conditions reported to induce genes of the vir region of the Agrobacterium Ti plasmid also increased the transfection frequency approximately two-fold. Therefore, in addition to the pararetroviruses and **geminiviruses** previously described, 'agroinoculation' may be used to infect plants with plus-sense RNA viruses.

L12 ANSWER 83 OF 95 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 93:192037 SCISEARCH
THE GENUINE ARTICLE: KT924
TITLE: MUTAGENESIS OF THE VIRION-SENSE OPEN READING FRAMES OF TOMATO LEAF CURL **GEMINIVIRUS**
AUTHOR: RIGDEN J E; DRY I B; MULLINEAUX P M; REZAIAN M A (Reprint)
CORPORATE SOURCE: CSIRO, DIV HORT, GPO BOX 350, ADELAIDE, SA 5001, AUSTRALIA; JOHN INNES INST, NORWICH NR4 7UH, NORFOLK, ENGLAND
COUNTRY OF AUTHOR: AUSTRALIA; ENGLAND
SOURCE: VIROLOGY, (APR 1993) Vol. 193, No. 2, pp. 1001-1005. ISSN: 0042-6822.
DOCUMENT TYPE: Note; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 21

L12 ANSWER 84 OF 95 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 93:192021 SCISEARCH
THE GENUINE ARTICLE: KT924
TITLE: GENETIC-ANALYSIS OF BEET CURLY TOP VIRUS - EVIDENCE FOR 3 VIRION SENSE GENES INVOLVED IN MOVEMENT AND REGULATION OF SINGLE-STRANDED AND DOUBLE-STRANDED DNA LEVELS
AUTHOR: HORMUZDI S G; BISARO D M (Reprint)
CORPORATE SOURCE: OHIO STATE UNIV, CTR BIOTECHNOL, COLUMBUS, OH, 43210; OHIO STATE UNIV, DEPT MOLEC GENET, COLUMBUS, OH, 43210
COUNTRY OF AUTHOR: USA
SOURCE: VIROLOGY, (APR 1993) Vol. 193, No. 2, pp. 900-909. ISSN: 0042-6822.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 39

L12 ANSWER 85 OF 95 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 92:615749 SCISEARCH
THE GENUINE ARTICLE: JT446
TITLE: MUTATIONAL ANALYSIS OF THE MONOPARTITE **GEMINIVIRUS** BEET CURLY TOP VIRUS
AUTHOR: STANLEY J (Reprint); LATHAM J R; PINNER M S; BEDFORD I; MARKHAM P G
CORPORATE SOURCE: JOHN INNES INST, JOHN INNES CTR PLANT SCI RES, COLNEY LANE, NORWICH NR4 7UH, NORFOLK, ENGLAND (Reprint)
COUNTRY OF AUTHOR: ENGLAND
SOURCE: VIROLOGY, (NOV 1992) Vol. 191, No. 1, pp. 396-405. ISSN: 0042-6822.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 51

L12 ANSWER 86 OF 95 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 92:461706 SCISEARCH
THE GENUINE ARTICLE: JF684
TITLE: CHARACTERIZATION OF BEET CURLY TOP VIRUS SUBGENOMIC DNA LOCALIZES SEQUENCES REQUIRED FOR REPLICATION
AUTHOR: FRISCHMUTH T; STANLEY J (Reprint)
CORPORATE SOURCE: JOHN INNES INST, JOHN INNES CTR PLANT SCI RES, COLNEY LANE, NORWICH NR4 7UH, NORFOLK, ENGLAND
COUNTRY OF AUTHOR: ENGLAND
SOURCE: VIROLOGY, (AUG 1992) Vol. 189, No. 2, pp. 808-811. ISSN: 0042-6822.
DOCUMENT TYPE: Note; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 22

L12 ANSWER 87 OF 95 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 92:427025 SCISEARCH
THE GENUINE ARTICLE: JD215
TITLE: TOBACCO LINES WITH HIGH COPY NUMBER OF REPLICATING RECOMBINANT **GEMINIVIRUS** VECTORS AFTER BIOLISTIC DNA DELIVERY
AUTHOR: KANEVSKI I F; THAKUR S; COSOWSKY L; SUNTER G; BROUGH C; BISARO D; MALIGA P (Reprint)
CORPORATE SOURCE: RUTGERS STATE UNIV, WAKSMAN INST, PISCATAWAY, NJ, 08855; OHIO STATE UNIV, CTR BIOTECHNOL, COLUMBUS, OH, 43210; OHIO STATE UNIV, DEPT MOLEC GENET, COLUMBUS, OH, 43210
COUNTRY OF AUTHOR: USA
SOURCE: PLANT JOURNAL, (JUL 1992) Vol. 2, No. 4, pp. 457-463. ISSN: 0960-7412.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 29

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB The feasibility of obtaining clonal lines with replicating, multicopy **geminivirus** vectors by direct DNA transformation of cultured tobacco cells was studied. The replicating vectors pTGA32 and pST31 are based on the tomato golden mosaic virus (TGMV) A genome and encode the neomycin phosphotransferase type II (NPT-II) enzyme that confers kanamycin resistance to plant cells. Following introduction into plant cells, unit-length viral genomes were released from the tandem repeats and replicated. In protoplasts, replication of unit-length pTGA32 and pST31 was about as efficient as replication of unit-length DNA A from plasmid pTGA26, which contains 1.5 copies of wild-type DNA A. Tobacco suspension culture cells were bombarded with the recombinant DNA A constructs and selected for kanamycin resistance. The number of kanamycin-resistant clones per bombardment was about the same when the TGMV DNA A vectors or a non-replicating plasmid (pLC14) which also encodes NPT-II was used. Replicating, unit-length DNA A in up to approximately 1000 copies per cell was found in about 10% of the kanamycin-resistant clones selected following bombardment of cells with TGMV vectors. The results suggest that **geminiviruses** may serve as useful multicopy vectors in cultured cells.

L12 ANSWER 88 OF 95 SCISEARCH COPYRIGHT 2000 ISI (R)

ACCESSION NUMBER: 92:239391 SCISEARCH
THE GENUINE ARTICLE: HM816
TITLE: DNA METHYLATION INHIBITS PROPAGATION OF TOMATO GOLDEN MOSAIC-VIRUS DNA IN TRANSFECTED PROTOPLASTS
AUTHOR: BROUGH C L; GARDINER W E; INAMDAR N M; ZHANG X Y; EHRLICH M (Reprint); BISARO D M
CORPORATE SOURCE: TULANE UNIV, MED CTR, DEPT BIOCHEM, NEW ORLEANS, LA, 70112; OHIO STATE UNIV, CTR BIOTECHNOL, COLUMBUS, OH, 43210; OHIO STATE UNIV, DEPT MOLEC GENET, COLUMBUS, OH, 43210; MISSISSIPPI STATE UNIV, DEPT BIOL SCI, STARKVILLE, MS, 39762
COUNTRY OF AUTHOR: USA
SOURCE: PLANT MOLECULAR BIOLOGY, (FEB 1992) Vol. 18, No. 4, pp. 703-712.
ISSN: 0167-4412.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE; AGRI
LANGUAGE: ENGLISH
REFERENCE COUNT: 45

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB The effects of methylation on plant viral DNA replication have been studied in Nicotiana tabacum protoplasts transfected with DNA of the **geminivirus** tomato golden mosaic virus (TGMV). The transfected cells were also used to determine whether experimentally introduced methylation patterns are maintained in extrachromosomal viral DNA. Replacement of cytosine residues with 5-methylcytosine (m5C) reduced the amount of viral DNA which accumulated in transfected protoplasts. The reduction was observed whether m5C residues were substituted for cytosine residues in vitro in either the viral strand or the complementary strand of double-stranded circular inoculum DNAs containing tandemly repeated copies of the A component of the TGMV genome. Both limited and extensive cytosine methylation of TGMV DNA sequences in vitro was not propagated in progeny viral DNA. The absence of detectable maintenance-type methylation of the transfecting TGMV DNA sequences may be related to the lack of methylation observed in double-stranded TGMV DNA isolated from infected plants.

L12 ANSWER 89 OF 95 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 92:176914 SCISEARCH
THE GENUINE ARTICLE: HH591
TITLE: INHIBITION OF AFRICAN CASSAVA MOSAIC-VIRUS SYSTEMIC INFECTION BY A MOVEMENT PROTEIN FROM THE RELATED **GEMINIVIRUS** TOMATO GOLDEN MOSAIC-VIRUS
AUTHOR: VONARNIM A; STANLEY J (Reprint)
CORPORATE SOURCE: JOHN INNES INST, JOHN INNES CTR PLANT SCI RES, COLNEY LANE, NORWICH NR4 7UH, NORFOLK, ENGLAND
COUNTRY OF AUTHOR: ENGLAND
SOURCE: VIROLOGY, (APR 1992) Vol. 187, No. 2, pp. 555-564.
ISSN: 0042-6822.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 38

L12 ANSWER 90 OF 95 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 92:117723 SCISEARCH
THE GENUINE ARTICLE: HD378
TITLE: A NUMBER OF SUBGENOMIC DNAS ARE PRODUCED FOLLOWING AGROINOCULATION OF PLANTS WITH BEET CURLY TOP VIRUS
AUTHOR: STENGER D C; STEVENSON M C; HORMUZDI S G; BISARO D M

(Reprint)
CORPORATE SOURCE: OHIO STATE UNIV, CTR BIOTECHNOL, COLUMBUS, OH, 43210; OHIO
STATE UNIV, DEPT MOLEC GENET, COLUMBUS, OH, 43210
COUNTRY OF AUTHOR: USA
SOURCE: JOURNAL OF GENERAL VIROLOGY, (FEB 1992) Vol. 73, Part 2, pp. 237-242.
ISSN: 0022-1317.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 32

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB In addition to ss and ds genomic DNA, agroinoculation of Nicotiana benthamiana plants with the Logan strain of the **geminivirus** beet curly top virus (BCTV) consistently resulted in de novo production of subgenomic DNAs on initial passage. Single-stranded and dsDNA forms representing at least seven size classes (0.8 to 1.8 kb) of subgenomic DNA were observed in total DNA extracts from inoculated plants. Extracts from infected sugar beet and tomato contained variable but usually smaller amounts of subgenomic DNAs, suggesting that their production may be influenced by the host species. Restriction endonuclease mapping and partial nucleotide sequencing of three independent clones of a 1.5 kb size class indicated that this subgenomic DNA is produced from the standard viral genome by two separate deletion events. One deletion of 941 bp includes portions of the leftward open reading frames (ORFs) L1, L2 and L3, while the other deletion of 579 bp encompasses portions of the intergenic region and the rightward ORFs R1, R2 and R3. The data indicate that the 1.5 kb BCTV subgenomic DNA is a defective DNA that has retained cis-elements essential for replication.

L12 ANSWER 91 OF 95 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 92:117366 SCISEARCH
THE GENUINE ARTICLE: HD628
TITLE: KINETICS OF TOMATO GOLDEN MOSAIC-VIRUS DNA-REPLICATION AND
COAT PROTEIN PROMOTER ACTIVITY IN NICOTIANA-TABACUM PROTOPLASTS
AUTHOR: BROUGH C L; SUNTER G; GARDINER W E; BISARO D M (Reprint)
CORPORATE SOURCE: OHIO STATE UNIV, CTR BIOTECHNOL, COLUMBUS, OH, 43210; OHIO
STATE UNIV, DEPT MOLEC GENET, COLUMBUS, OH, 43210
COUNTRY OF AUTHOR: USA
SOURCE: VIROLOGY, (MAR 1992) Vol. 187, No. 1, pp. 1-9.
ISSN: 0042-6822.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 35

L12 ANSWER 92 OF 95 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 92:29102 SCISEARCH
THE GENUINE ARTICLE: GX701
TITLE: TOMATO YELLOW LEAF CURL VIRUS FROM SARDINIA IS A WHITEFLY-TRANSMITTED MONOPARTITE **GEMINIVIRUS**
AUTHOR: KHEYRPOUR A; BENDAHMANE M; MATZEIT V; ACCOTTO G P; CRESPI S; GRONENBORN B (Reprint)
CORPORATE SOURCE: CNRS, INST SCI VEGETALES, F-91198 GIF SUR YVETTE, FRANCE; MAX PLANCK INST ZUCHTUNGSFORSCH, W-5000 COLOGNE 30,

GERMANY; CNR, IST FITOVIROL APPLICATA, I-10135 TURIN, ITALY
COUNTRY OF AUTHOR: FRANCE; GERMANY; ITALY
SOURCE: NUCLEIC ACIDS RESEARCH, (25 DEC 1991) Vol. 19, No. 24, pp.
6763-6769.
ISSN: 0305-1048.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 54

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB The genome of an isolate of tomato yellow leaf curl virus from Sardinia, Italy (TYLCV-S), a **geminivirus** transmitted by the whitefly Bemisia tabaci, has been cloned and sequenced. The single circular DNA molecule comprises 2770 nucleotides. Genome organisation closely resembles that of the DNA A component of the whitefly-transmitted **geminiviruses** with a bipartite genome. A 1.8 mer of the TYLCV-S genome in a binary vector of Agrobacterium tumefaciens is infectious upon agroinoculation of tomato plants. Typical tomato yellow leaf curl disease symptoms developed about three weeks after inoculation. The disease was transmitted by the natural vector B. tabaci from agroinfected plants to test plants, reproducing in this way the full biological cycle and proving that the genome of TYLCV-S consists of only one circular single-stranded DNA molecule. Contrary to the other whitefly-transmitted **geminiviruses** described so far, there is no evidence for the existence nor the necessity of a second component (B DNA) in the TYLCV-S genome.

L12 ANSWER 93 OF 95 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 92:1070 SCISEARCH
THE GENUINE ARTICLE: GU994
TITLE: DETERMINANTS OF TOMATO GOLDEN MOSAIC-VIRUS SYMPTOM DEVELOPMENT LOCATED ON DNA-B
AUTHOR: VONARNIM A; STANLEY J (Reprint)
CORPORATE SOURCE: JOHN INNES INST, JOHN INNES CTR PLANT SCI RES, DEPT VIRUS RES, COLNEY LANE, NORWICH NR4 7UH, NORFOLK, ENGLAND
COUNTRY OF AUTHOR: ENGLAND
SOURCE: VIROLOGY, (JAN 1992) Vol. 186, No. 1, pp. 286-293.
ISSN: 0042-6822.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 35

L12 ANSWER 94 OF 95 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 91:571631 SCISEARCH
THE GENUINE ARTICLE: GJ980
TITLE: TOMATO YELLOW LEAF CURL VIRUS - A WHITEFLY-TRANSMITTED **GEMINIVIRUS** WITH A SINGLE GENOMIC COMPONENT
AUTHOR: NAVOT N; PICHERSKY E; ZEIDAN M; ZAMIR D; CZOSNEK H (Reprint)
CORPORATE SOURCE: HEBREW UNIV JERUSALEM, DEPT FIELD & VEGETABLE CROPS, POB 12, IL-76100 REHOVOT, ISRAEL; HEBREW UNIV JERUSALEM, FAC AGR, OTTO WARBURG CTR BIOTECHNOL AGR, IL-76100 REHOVOT, ISRAEL; UNIV MICHIGAN, DEPT BIOL, ANN ARBOR, MI, 48109
COUNTRY OF AUTHOR: ISRAEL; USA
SOURCE: VIROLOGY, (1991) Vol. 185, No. 1, pp. 151-161.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE

LANGUAGE: ENGLISH
REFERENCE COUNT: 50

L12 ANSWER 95 OF 95 SCISEARCH COPYRIGHT 2000 ISI (R)
ACCESSION NUMBER: 91:19981 SCISEARCH
THE GENUINE ARTICLE: EP908
TITLE: TRANSACTIVATION IN A **GEMINIVIRUS** - AL2
GENE-PRODUCT IS NEEDED FOR COAT PROTEIN EXPRESSION
AUTHOR: SUNTER G; BISARO D M (Reprint)
CORPORATE SOURCE: OHIO STATE UNIV, CTR BIOTECHNOL, COLUMBUS, OH, 43210;
OHIO
STATE UNIV, DEPT MOLEC GENET, COLUMBUS, OH, 43210
COUNTRY OF AUTHOR: USA
SOURCE: VIROLOGY, (1991) Vol. 180, No. 1, pp. 416-419.
DOCUMENT TYPE: Note; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 20

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(FILE 'HOME' ENTERED AT 11:49:26 ON 07 DEC 2000)

FILE 'DGENE, CAPLUS, BIOSIS, MEDLINE, EMBASE, SCISEARCH' ENTERED AT
11:49:52 ON 07 DEC 2000
L1 258 S GEMINVIRUS OR BADNAVIRUS
L2 58 S L1 AND (TRANSGEN? OR VECTOR?)
L3 3767 S GEMINIVIRUS OR BADNAVIRUS
L4 58 S L1 AND (VECTOR? OR TRANSGEN?)
L5 1434 S L3 AND (VECTOR? OR TRANSGEN?)
L6 1027 DUP REM L5 (407 DUPLICATES REMOVED)
L7 13 S L6 AND SILENC?
L8 814 S L5 AND ED=<19980330
L9 0 S L7 AND ED=<19980330
L10 516 S L3 AND TRANSGENIC PLANT
L11 443 DUP REM L10 (73 DUPLICATES REMOVED)
L12 95 S L11 AND ED=<19980330

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(FILE 'HOME' ENTERED AT 11:49:26 ON 07 DEC 2000)

FILE 'DGENE, CAPLUS, BIOSIS, MEDLINE, EMBASE, SCISEARCH' ENTERED AT
11:49:52 ON 07 DEC 2000
L1 258 S GEMINVIRUS OR BADNAVIRUS
L2 58 S L1 AND (TRANSGEN? OR VECTOR?)
L3 3767 S GEMINIVIRUS OR BADNAVIRUS
L4 58 S L1 AND (VECTOR? OR TRANSGEN?)
L5 1434 S L3 AND (VECTOR? OR TRANSGEN?)
L6 1027 DUP REM L5 (407 DUPLICATES REMOVED)
L7 13 S L6 AND SILENC?
L8 814 S L5 AND ED=<19980330
L9 0 S L7 AND ED=<19980330
L10 516 S L3 AND TRANSGENIC PLANT
L11 443 DUP REM L10 (73 DUPLICATES REMOVED)
L12 95 S L11 AND ED=<19980330

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(FILE 'HOME' ENTERED AT 11:49:26 ON 07 DEC 2000)

FILE 'DGENE, CAPLUS, BIOSIS, MEDLINE, EMBASE, SCISEARCH' ENTERED AT 11:49:52 ON 07 DEC 2000

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L1          258 S GEMINVIRUS OR BADNAVIRUS
L2           58 S L1 AND (TRANSGEN? OR VECTOR?)
L3         3767 S GEMINIVIRUS OR BADNAVIRUS
L4           58 S L1 AND (VECTOR? OR TRANSGEN?)
L5         1434 S L3 AND (VECTOR? OR TRANSGEN?)
L6         1027 DUP REM L5 (407 DUPLICATES REMOVED)
L7           13 S L6 AND SILENC?
L8          814 S L5 AND ED=<19980330
L9            0 S L7 AND ED=<19980330
L10         516 S L3 AND TRANSGENIC PLANT
L11         443 DUP REM L10 (73 DUPLICATES REMOVED)
L12          95 S L11 AND ED=<19980330

=> d abs ibib l7 1-13
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L7 ANSWER 1 OF 13 DGENE COPYRIGHT 2000 DERWENT INFORMATION LTD

AB This sequence represents a PCR primer which is used to amplify **silencer** elements from **geminiviruses**. The PCR product is used in a modified construct containing geminiviral promoters and an antisense rice PCNA. The invention relates to a chimeric gene or recombinant DNA molecule, comprising a plant pathogen inducible control sequence operably linked to a cell cycle gene. Examples of the cell cycle gene include cyclin genes, cyclin dependent kinase genes, a retinoblastoma gene or a gene encoding a protein involved in DNA replication. In combination the pathogen inducible control sequence, and cell cycle gene, are capable of modifying the cell cycle of a plant cell in response to infection. A **vector** containing the chimeric gene can be used to create a host cell expressing the gene. The chimeric gene or recombinant DNA molecule can be used for reducing susceptibility to plant pathogen infections or spread, and to combat or control plant pathogens and infections. Inhibiting the cell cycle upon pathogenic infection is a nondestructive method (expression of cell cycle genes will not affect non-dividing cells) and will not affect the physiology of other cells and tissues in the plant. Also the use of **transgenic** cell cycle technologies will reduce the use of highly toxic pesticides and should give broad range and long term resistance against many species of pathogens

ACCESSION NUMBER: 2000N-Z59422 DNA DGENE
TITLE: Novel DNA control sequence useful for controlling and combating plant pathogen infections and spread -
INVENTOR: Gheysen G; Mironov V; Inze D G; Terras F R G; Van Camp W; Sanz Molinero A I
PATENT ASSIGNEE: (CROP-N)CROPDESIGN NV
PATENT INFO: WO 9966055 A2 19991223 82p
APPLICATION INFO: WO 1999-EP4139 19990615
PRIORITY INFO: EP 1998-202012 19980615
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2000-106106 [09]

L7 ANSWER 2 OF 13 DGENE COPYRIGHT 2000 DERWENT INFORMATION LTD

AB This sequence represents a PCR primer which is used to amplify **silencer** elements from **geminiviruses**. The PCR product is used in a modified construct containing geminiviral promoters and an antisense rice PCNA. The invention relates to a chimeric gene or recombinant DNA molecule, comprising a plant pathogen inducible control sequence operably linked to a cell cycle gene. Examples of the cell cycle gene include cyclin genes, cyclin dependent kinase genes, a retinoblastoma gene or a gene encoding a protein involved in DNA replication. In combination the pathogen inducible control sequence, and cell cycle gene, are capable of modifying the cell cycle of a plant cell in response to infection. A **vector** containing the chimeric gene can be used to create a host cell expressing the gene. The chimeric gene or recombinant DNA molecule can be used for reducing susceptibility to plant pathogen infections or spread, and to combat or control plant pathogens and infections. Inhibiting the cell cycle upon pathogenic infection is a nondestructive method (expression of cell cycle genes will not affect non-dividing cells) and will not affect the physiology of other cells and tissues in the plant. Also the use of **transgenic** cell cycle technologies will reduce the use of highly toxic pesticides and should give broad range and long term resistance against many species of pathogens

ACCESSION NUMBER: 2000N-Z59421 DNA DGENE
TITLE: Novel DNA control sequence useful for controlling and combating plant pathogen infections and spread -
INVENTOR: Gheysen G; Mironov V; Inze D G; Terras F R G; Van Camp W; Sanz Molinero A I
PATENT ASSIGNEE: (CROP-N)CROPDESIGN NV
PATENT INFO: WO 9966055 A2 19991223 82p
APPLICATION INFO: WO 1999-EP4139 19990615
PRIORITY INFO: EP 1998-202012 19980615
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2000-106106 [09]

L7 ANSWER 3 OF 13 DGENE COPYRIGHT 2000 DERWENT INFORMATION LTD
AB The present sequence is that of primer Sil-2, used in the PCR amplification of the **silencer**-like element of pepper huasteco virus (PHV). The amplified DNA fragment was used in constructs in which the PHV **silencer** was combined with a **geminivirus** conserved late element (CLE). CLEs (see Z57884-87) are cis-acting elements present in the intergenic region of some **geminiviruses**. They promote transcription by responding to nuclear factors present and/or activated in a plant cell after geminiviral infection. The invention relates to a chimeric promoter (I) that is capable of mediating the expression of a heterologous DNA sequence in plants upon **geminivirus** infection, and which comprises at least 1 CLE and a promoter. (I), or a gene or a **vector** comprising (I), is used in claimed methods for producing **transgenic** plants with a reduced susceptibility to geminiviral infection and spread

ACCESSION NUMBER: 2000N-Z57893 DNA DGENE
TITLE: Chimeric promoter for mediating **geminivirus**-induced gene expression -
INVENTOR: Rivera-Bustamante R F; Ruiz-Medrano R; Arguello-Astorga G; Monsalve-Fonnegra Z I
PATENT ASSIGNEE: (INVE-N)CENT INVESTIGACION ESTUDIOS AVANZADOS
PATENT INFO: WO 9960140 A2 19991125 63p
APPLICATION INFO: WO 1999-IB1282 19990519

PRIORITY INFO: EP 1998-201636 19980519
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2000-116317 [10]

L7 ANSWER 4 OF 13 DGENE COPYRIGHT 2000 DERWENT INFORMATION LTD
AB The present sequence is that of primer Sil-1, used in the PCR amplification of the **silencer**-like element of pepper huasteco virus (PHV). The amplified DNA fragment was used in constructs in which the PHV **silencer** was combined with a **geminivirus** conserved late element (CLE). CLEs (see Z57884-87) are cis-acting elements present in the intergenic region of some **geminiviruses**. They promote transcription by responding to nuclear factors present and/or activated in a plant cell after geminiviral infection. The invention relates to a chimeric promoter (I) that is capable of mediating the expression of a heterologous DNA sequence in plants upon **geminivirus** infection, and which comprises at least 1 CLE and a promoter. (I), a or gene or **vector** comprising (I), is used in claimed methods for producing **transgenic** plants with a reduced susceptibility to geminiviral infection and spread
ACCESSION NUMBER: 2000N-Z57892 DNA DGENE
TITLE: Chimeric promoter for mediating **geminivirus**-induced gene expression -
INVENTOR: Rivera-Bustamante R F; Ruiz-Medrano R; Arguello-Astorga G; Monsalve-Fonnegra Z I
PATENT ASSIGNEE: (INVE-N)CENT INVESTIGACION ESTUDIOS AVANZADOS
PATENT INFO: WO 9960140 A2 19991125 63p
APPLICATION INFO: WO 1999-IB1282 19990519
PRIORITY INFO: EP 1998-201636 19980519
DOCUMENT TYPE: Patent
LANGUAGE: English
OTHER SOURCE: 2000-116317 [10]

L7 ANSWER 5 OF 13 CAPLUS COPYRIGHT 2000 ACS
AB Gene **silencing** is a multifaceted phenomenon leading to propagative down-regulation of gene expression. Gene **silencing**, first obsd. in plants contg. **transgenes**, can operate both at the transcriptional and post-transcriptional levels. **Silencing** effects can be triggered by nuclear **transgenes** and by cytoplasmic RNA viruses, and it can be propagated between these elements and endogenous plant genes that share sequence homol. Although some aspects of gene **silencing** are becoming better understood, little is yet known about the relationship between nuclear and cytoplasmic events. Plant DNA viruses - both the ssDNA **geminiviruses** and the reverse-transcribing pararetroviruses - have properties with the potential to initiate gene **silencing** in the nucleus and in the cytoplasm. Characteristics include prodn. of multiple copies of viral DNA genomes in the nucleus, illegitimate integration of viral DNA into host chromosomes mimicking **transgene** transformation, and generation of abundant viral RNAs in the cytoplasm. Evidence is emerging that **geminiviruses** and plant pararetroviruses can interact with the gene **silencing** system either from introduced DNA constructs or during viral pathogenesis. Some observations suggest there are complex relationships between DNA viral activity, transcriptional and post-transcriptional gene **silencing** mechanisms. DNA viruses also have properties consistent with an ability to counteract the plant **silencing** response. In this article, features of plant DNA viruses are discussed in relation to gene **silencing** phenomena, and the prospects for understanding the interaction between nuclear and

cytoplasmic **silencing** processes.

ACCESSION NUMBER: 2000:659002 CAPLUS
TITLE: Plant DNA viruses and gene **silencing**
AUTHOR(S): Covey, Simon N.; Al-Kaff, Nadia S.
CORPORATE SOURCE: John Innes Centre, Norwich Research Park, Norwich, NR4
7UH, UK
SOURCE: Plant Mol. Biol. (2000), 43(2/3), 307-322
CODEN: PMBIDB; ISSN: 0167-4412
PUBLISHER: Kluwer Academic Publishers
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 71
REFERENCE(S): (1) Ach, R; Mol Cell Biol 1997, V17, P5077 CAPLUS
(2) Al-Kaff, N; Mol Plant-Microbe Interact 1996, V9, P357 CAPLUS
(4) Al-Kaff, N; Science 1998, V279, P2113 CAPLUS
(5) Ashby, M; Plant Mol Biol 1997, V35, P313 CAPLUS
(6) Atkinson, R; Plant J 1998, V15, P593 CAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 6 OF 13 CAPLUS COPYRIGHT 2000 ACS
AB This invention provides a regulated binary plant viral expression system comprised of two chromosomally-integrated components. One component is an incomplete replicon (a pro-replicon), that contains cis-acting viral sequences required for replication and a target gene. The pro-replicon lacks a gene essential for its function, and thus cannot undergo autonomous episomal replication. The other component is a chimeric trans-acting replication gene under control of a regulated promoter. Expression of the trans-acting replication protein in plant cells contg. the pro-replicon will trigger the release of free replicon from the integrated pro-replicon, resulting in its episomal replication in trans and the expression of the target gene, if present, through gene amplification. The expression system is useful for both prodn. of foreign proteins as well as **silencing** endogenous genes and **transgenes** in plant tissue. Tissue-specific expression is controlled by the choice of promoter controlling the transcription of the trans-acting replication gene.

ACCESSION NUMBER: 2000:210387 CAPLUS
DOCUMENT NUMBER: 132:247158
TITLE: Binary viral expression system for plants using site-specific recombination to regulate the formation of a replication-competent episome
INVENTOR(S): Yadav, Narendra S.
PATENT ASSIGNEE(S): E.I. Du Pont De Nemours and Co., USA
SOURCE: PCT Int. Appl., 82 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000017365	A2	20000330	WO 1999-US21989	19990922
WO 2000017365	A3	20000824		

W: AU, BR, CA, HU, IL, JP, KR, MX, NZ, PL, US
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE

PRIORITY APPLN. INFO.: US 1998-101558 19980923
US 1999-130086 19990420

L7 ANSWER 7 OF 13 CAPLUS COPYRIGHT 2000 ACS

AB Novel chimeric promoters which allow controlled transcription and/or expression of a nucleic acid sequence upon **geminivirus** infection, and the use of such recombinant promoters are provided. Furthermore, recombinant genes comprising such promoters, and **transgenic** plant cells, and plants comprising the chimeric promoters or recombinant genes are described. It appears that upon infection of the plant with wild-type virus, or a part thereof such as the AC2 protein, expression of adjacent genes occurs under the control and influence of a geminiviral promoter. Small nucleotide sequences, referred to as CLEs (conserved late elements), present in the geminiviral promoter, are sufficient to induce said expression. According to the current invention it is thus feasible to construct **transgenic** plants, comprising at least one of said CLEs or functional fragments thereof, which are resistant to geminiviral infection. To obtain this effect, adjacent to or operably linked to any of the said CLEs any gene or gene combination can be constructed, which gene or gene product is able to interfere with the outbreak or growth characteristics of the **geminivirus** in order to arrest further spread of the **geminivirus** in the infected plant or part thereof.

ACCESSION NUMBER: 1999:753362 CAPLUS
DOCUMENT NUMBER: 132:9623
TITLE: **Geminivirus** inducible promoter sequences and the uses thereof to control **geminivirus** infection in plants
INVENTOR(S): Rivera-Bustamante, Rafael F.; Ruiz-Medrano, Roberto; Arguello-Astorga, Gerardo; Monsalve-Fonnegra, Zulma I.
PATENT ASSIGNEE(S): Centro de Investigacion y de Estudios Avanzados del I.P.N. (CINVESTAV), Mex.
SOURCE: PCT Int. Appl., 64 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9960140	A2	19991125	WO 1999-IB1282	19990519
WO 9960140	A3	20000615		
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
EP 960940	A1	19991201	EP 1998-201636	19980519
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
AU 9945286	A1	19991206	AU 1999-45286	19990519

PRIORITY APPLN. INFO.: EP 1998-201636 19980519

L7 ANSWER 8 OF 13 CAPLUS COPYRIGHT 2000 ACS

AB The introduction of DNA episomes into plant cells to reduce or prevent the expression of endogenous nuclear or chromosomal genes is described. **Geminivirus vectors** (e.g., tomato golden mosaic virus, TGMV) to provide systemic **silencing** of an endogenous plant gene in a treated plant are described. Two markers were used to assess **silencing**: (1) the sulfur allele (su) of magnesium chelatase, and enzyme require for chlorophyll formation; and (2) the firefly luciferase gene (luc). Various portions of both marker genes were inserted into TGMV in place of the coat protein open reading frame and the constructs introduced in leaves of wild-type Nicotiana benthamiana using particle bombardment. Fragments that caused **silencing** included a 786-bp 5'-fragment of the 1392-bp su cDNA in sense and antisense orientation, and a 403-bp 3'-fragment of su cDNA. TGMV::su-induced **silencing** was propagated through tissue culture, along with the viral episome, but was not retained through meiosis. Systemic down-regulation of a constitutively expressed luciferase **transgene** in plants was achieved following infection with TGMV **vectors** carrying a 62-bp portion of luc in sense or antisense orientation. Thus, a nuclear-localized DNA virus (such as the TGMV **geminivirus**) carrying sequences complementary to (or having substantial sequence similarity to) chromosomal genes can **silence** the chromosomal gene.

ACCESSION NUMBER: 1999:641000 CAPLUS
DOCUMENT NUMBER: 131:253367
TITLE: Suppression of gene expression in plants using **geminivirus vectors**
INVENTOR(S): Robertson, Dominique
PATENT ASSIGNEE(S): North Carolina State University, USA
SOURCE: PCT Int. Appl., 42 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9950429	A1	19991007	WO 1999-US6082	19990319
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
AU 9931048	A1	19991018	AU 1999-31048	19990319
PRIORITY APPLN. INFO.:			US 1998-80383	19980401
			WO 1999-US6082	19990319

REFERENCE COUNT: 8
REFERENCE(S):
(1) Atkinson, R; THE PLANT JOURNAL 1998, V15(5), P593 CAPLUS
(2) Baulcombe, D; CURRENT OPINION IN BIOTECHNOLOGY 1996, V7(2), P173 CAPLUS
(3) Hanley-Bowdoin, L; NUCLEIC ACID RESEARCH 1988,

V16(2), P10511
(4) Hayes, R; NATURE 1988, V334, P179 CAPLUS
(5) Kjemtrup, S; THE PLANT JOURNAL 1998, V14(1), P91 CAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 9 OF 13 CAPLUS COPYRIGHT 2000 ACS
AB The present invention provides methods for rapidly detg. the function of nucleic acid sequences by transfecting the same into a host organism to effect expression. Phenotypic and biochem. changes produced thereby are then analyzed to ascertain the function of the nucleic acids which have been transfected into the host organism. The invention also provides methods for **silencing** endogenous genes by transfecting hosts with nucleic acid sequences to effect expression of the same. The present invention also provides methods for selecting desired functions of RNAs and proteins by the use of virus **vectors** to express libraries of nucleic acid sequence variants. Moreover, the present invention provides methods for inhibiting an endogenous protease of a plant host.

ACCESSION NUMBER: 1999:468606 CAPLUS
DOCUMENT NUMBER: 131:98475
TITLE: Method of determining the function of nucleotide sequences and the proteins they encode by transfecting the same into a host
INVENTOR(S): Della-Cioppa, Guy; Erwin, Robert L.; Fitzmaurice, Wayne P.; Hanley, Kathleen M.; Kumagai, Monto H.; Lindbo, John A.; McGee, David R.; Padgett, Hal S.; Pogue, Gregory P.
PATENT ASSIGNEE(S): Biosource Technologies, Inc., USA
SOURCE: PCT Int. Appl., 156 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9936516	A2	19990722	WO 1999-US1164	19990115
WO 9936516	A3	20000316		
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
AU 9923286	A1	19990802	AU 1999-23286	19990115
EP 1045899	A2	20001025	EP 1999-903208	19990115
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
PRIORITY APPLN. INFO.:			US 1998-8186	19980116
			WO 1999-US1164	19990115

L7 ANSWER 10 OF 13 CAPLUS COPYRIGHT 2000 ACS
AB This invention provides a regulated binary plant viral expression system comprised of two chromosomally-integrated components. One component is a pro-replicon, which contains cis-acting viral sequences (required for

replication) and a target gene. The pro-replicon lacks the replication gene essential for replicon replication, and thus cannot undergo autonomous episomal replication. The other component is a chimeric trans-acting replication gene comprising a regulated promoter operably-linked to the coding region for a viral replication protein. Regulated expression of the trans-acting replication protein in plant cells also contg. the pro-replicon will trigger the release of free replicon from the integrated pro-replicon, resulting in its episomal replication in trans and the expression of the target gene, if present, through gene amplification. The expression system is useful for both prodn. of foreign proteins as well as **silencing** endogenous genes and **transgenes** in plant tissue. Tissue-specific expression is controlled by the choice of promoter controlling the transcription of the trans-acting replication gene.

ACCESSION NUMBER: 1999:299523 CAPLUS
DOCUMENT NUMBER: 130:321579
TITLE: Binary viral expression system for use in plants
INVENTOR(S): Yadav, Narendra S.
PATENT ASSIGNEE(S): E.I. Du Pont De Nemours and Company, USA
SOURCE: PCT Int. Appl., 46 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9922003	A1	19990506	WO 1998-US22688	19981023
W: AU, BR, CA, HU, IL, JP, KR, MX, NZ, PL, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
AU 9911225	A1	19990517	AU 1999-11225	19981023
US 6077992	A	20000620	US 1998-178089	19981023
EP 1025234	A1	20000809	EP 1998-953997	19981023
R: DE, ES, FR, GB, IT, SE				

PRIORITY APPLN. INFO.: US 1997-63504 19971024
US 1998-101558 19980923
WO 1998-US22688 19981023

REFERENCE COUNT: 4
REFERENCE(S):
(1) Hanley-Bowdoin, L; PNAS USA 1990, V87(4), P1446 CAPLUS
(2) Hayes, R; Nucleic Acids Research 1989, V17(24), P10213 CAPLUS
(3) Hong, Y; Virology 1996, V220(1), P119 CAPLUS
(4) Hong, Y; Virology 1997, V228(2), P383 CAPLUS

L7 ANSWER 11 OF 13 CAPLUS COPYRIGHT 2000 ACS
AB A **vector** that produces DNA replicons (multicopy plant episomes) was constructed using elements of the **geminivirus** tobacco yellow dwarf virus (TYDV). All plant cells contain an integrated chromosomal T-DNA copy of the TYDV elements that provides a template for the prodn. of episomes in the cell nucleus. **Transgenic** Petunia hybrida plants contg. a CaMV 35S promoter-driven chalcone synthase A (ChsA) gene cloned into the episomal **vector** produced flowers with a white-spotted phenotype at high frequency. The spots were found at random locations in the petals and occurred in corresponding positions in both the upper and lower epidermis, indicating that the spots were non-clonal. The spotted phenotype was somatically stable and was inherited through meiosis. In white-spotted flower tissue, steady-state ChsA mRNA levels were

down-regulated but rates of RNA transcription were unaffected, suggesting that the phenotype resulted from post-transcriptional gene **silencing** of the endogenous and episomal ChsA genes. Increases in both the frequency and extent of gene **silencing** in flowers correlated with increases in episome copy no. in mature flowers, flower buds and young and fully expanded leaves. Relatively small increases in episome copy no. (less than threefold) appeared sufficient to trigger the gene-**silenced** phenotype.

ACCESSION NUMBER: 1998:649477 CAPLUS
DOCUMENT NUMBER: 130:48016
TITLE: Post-transcriptional **silencing** of chalcone synthase in petunia using a **geminivirus** -based episomal **vector**
AUTHOR(S): Atkinson, Ross G.; Bieleski, Lara R. F.; Gleave, Andrew P.; Janssen, Bart-Jan; Morris, Bret A. M.
CORPORATE SOURCE: Gene Transfer and Expression Group, Horticulture and Food Research Institute of New Zealand, Auckland, N. Z.
SOURCE: Plant J. (1998), 15(5), 593-604
CODEN: PLJUED; ISSN: 0960-7412
PUBLISHER: Blackwell Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
REFERENCE COUNT: 45
REFERENCE(S): (1) Angell, S; EMBO J 1997, V16, P3675 CAPLUS
(3) Baulcombe, D; Curr Opin Biotechnol 1996, V7, P173 CAPLUS
(4) Boulton, M; J Gen Virol 1989, V70, P2309 CAPLUS
(5) Brough, C; Plant Mol Biol 1992, V18, P703 CAPLUS
(6) Cluster, P; Plant Mol Biol 1996, V32, P1197 CAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 12 OF 13 CAPLUS COPYRIGHT 2000 ACS
AB The **geminivirus** tomato golden mosaic virus (TGMV) replicates in nuclei and expresses genes from high copy no. DNA episomes. The authors used TGMV as a **vector** to det. whether episomal DNA can cause **silencing** of homologous, chromosomal genes. Two markers were used to assess **silencing**: (1) the sulfur allele (su) of magnesium chelatase, an enzyme required for chlorophyll formation; and (2) the firefly luciferase gene (luc). Various portions of both marker genes were inserted into TGMV in place of the coat protein open-reading frame and the constructs were introduced into intact plants using particle bombardment. When TGMV **vectors** carrying fragments of su (TGMV plus su) were introduced into leaves of wild-type Nicotiana benthamiana, circular, yellow spots with an area of several hundred cells formed after 3-5 days. Systemic movement of TGMV plus su subsequently produced variegated leaf and stem tissue. Fragments that caused **silencing** included a 786 bp 5' fragment of the 1392 bp su cDNA in sense and anti-sense orientation, and a 403 bp 3' fragment. TGMV plus su-induced **silencing** was propagated through tissue culture, along with the viral episome, but was not retained through meiosis. Systemic downregulation of a constitutively expressed luciferase **transgene** in plants was achieved following infection with TGMV **vectors** carrying a 623 bp portion of luc in sense or anti-sense orientation. These results establish that homologous DNA sequences localized in nuclear episomes can modulate the expression of

active chromosomal genes.

ACCESSION NUMBER: 1998:309121 CAPLUS
DOCUMENT NUMBER: 129:91319
TITLE: Gene **silencing** from plant DNA carried by a **Geminivirus**
AUTHOR(S): Kjemtrup, Susanne; Sampson, Kim S.; Peele, Charles G.; Nguyen, Long V.; Conkling, Mark A.; Thompson, William F.; Robertson, Dominique
CORPORATE SOURCE: Departments of Botany and Genetics, North Carolina State University, Raleigh, NC, 27695, USA
SOURCE: Plant J. (1998), 14(1), 91-100
CODEN: PLJUED; ISSN: 0960-7412
PUBLISHER: Blackwell Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English

L7 ANSWER 13 OF 13 MEDLINE

AB In **transgenic** and nontransgenic plants, viruses are both initiators and targets of a defense mechanism that is similar to posttranscriptional gene **silencing** (PTGS). Recently, it was found that potyviruses and cucumoviruses encode pathogenicity determinants that suppress this defense mechanism. Here, we test diverse virus types for the ability to suppress PTGS. Nicotiana benthamiana exhibiting PTGS of a green fluorescent protein **transgene** were infected with a range of unrelated viruses and various potato virus X **vectors** producing viral pathogenicity factors. Upon infection, suppression of PTGS was assessed in planta through reactivation of green fluorescence and confirmed by molecular analysis. These experiments led to the identification of three suppressors of PTGS and showed that suppression of PTGS is widely used as a counter-defense strategy by DNA and RNA viruses. However, the spatial pattern and degree of suppression varied extensively between viruses. At one extreme, there are viruses that suppress in all tissues of all infected leaves, whereas others are able to suppress only in the veins of new emerging leaves. This variation existed even between closely related members of the potexvirus group. Collectively, these results suggest that virus-encoded suppressors of gene **silencing** have distinct modes of action, are targeted against distinct components of the host gene-**silencing** machinery, and that there is dynamic evolution of the host and viral components associated with the gene-**silencing** mechanism.

ACCESSION NUMBER: 2000040691 MEDLINE
DOCUMENT NUMBER: 20040691
TITLE: Suppression of gene **silencing**: a general strategy used by diverse DNA and RNA viruses of plants.
AUTHOR: Voinnet O; Pinto Y M; Baulcombe D C
CORPORATE SOURCE: The Sainsbury Laboratory, John Innes Centre, Norwich NR4 7UH, United Kingdom.
SOURCE: PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA, (1999 Nov 23) 96 (24) 14147-52.
Journal code: PV3. ISSN: 0027-8424.
PUB. COUNTRY: United States
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals; Cancer Journals

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ENTRY MONTH:          200003
ENTRY WEEK:           20000302

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L2             58 S L1 AND (TRANSGEN? OR VECTOR?)
L3           3767 S GEMINIVIRUS OR BADNAVIRUS
L4             58 S L1 AND (VECTOR? OR TRANSGEN?)
L5           1434 S L3 AND (VECTOR? OR TRANSGEN?)
L6           1027 DUP REM L5 (407 DUPLICATES REMOVED)
L7             13 S L6 AND SILENC?
L8            814 S L5 AND ED=<19980330
L9              0 S L7 AND ED=<19980330
L10           516 S L3 AND TRANSGENIC PLANT
L11           443 DUP REM L10 (73 DUPLICATES REMOVED)
L12            95 S L11 AND ED=<19980330

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     11:49:52 ON 07 DEC 2000
L1            258 S GEMINVIRUS OR BADNAVIRUS
L2             58 S L1 AND (TRANSGEN? OR VECTOR?)
L3           3767 S GEMINIVIRUS OR BADNAVIRUS
L4             58 S L1 AND (VECTOR? OR TRANSGEN?)
L5           1434 S L3 AND (VECTOR? OR TRANSGEN?)
L6           1027 DUP REM L5 (407 DUPLICATES REMOVED)
L7             13 S L6 AND SILENC?
L8            814 S L5 AND ED=<19980330
L9              0 S L7 AND ED=<19980330
L10           516 S L3 AND TRANSGENIC PLANT
L11           443 DUP REM L10 (73 DUPLICATES REMOVED)
L12            95 S L11 AND ED=<19980330

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